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Transactions of the Massachusetts Horticultural ...

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TRANSACTIONS

OF THE

Massachusetts Horticultural Society,

FOR THE YEAR 1901.

PART I.

BOSTON:
PRINTED FOR THE SOCIETY.
1902.

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TRANSACTIONS

OF THE

Massachusetts Horticultural Society.

FOR THE YEAR 1901.

PART I.

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The following lectures have been circulated to some extent in the form of slips reprinted from the reports made by the Secretary of the Society in the "Boston Evening Transcript." As here presented, the lectures are, as far as possible, printed in full, and reports of the discussions following the lectures are added, these, where it appeared necessary, having been carefully revised by the speakers.

The Committee on Lectures and Publication take this opportunity to repeat what they have before stated, that the Society is not to be held responsible for the certainty of the statements, the correctness of the opinions, or the accuracy of the nomenclature, in the lectures and discussions now or heretofore published, all of which must rest on the credit or judgment of the respective writers or speakers, the Society undertaking only to present these papers and discussions, or the substance of them, correctly.

AARON LOW,
J. H. BOWDITCH,
E. W. WOOD,
Committee on Lectures and Publication.

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TRANSACTIONS

OF THE

Massachusetts Horticultural Society.

BUSINESS MEETING.

SATURDAY, January 5, 1901.

A duly notified stated meeting of the Society was holden today at eleven o'clock.

In the absence of President FRANCIS H. APPLETON, by reason of illness, the chair was taken by Vice-President BENJAMIN P. WARE, who introduced the President-elect in the following remarks:—

In the absence of the President it becomes my duty to call this meeting to order. In entering into a new year and a new century we are reminded of the important work that this Society has accomplished since its organization, nearly seventy-two years ago. Beginning in a small way, by persistent effort in advancing the science and art of horticulture and agriculture, we have made great improvement in the varieties and quality of flowers, fruits, and vegetables, and have taken a position second to no other Horticultural Society in this country. We commence the century under hopeful auspices for continued success with a new President who comes to us with a lifelong successful experience as a horticulturist and farmer; also as President of the Worcester County Horticultural Society. It is with pleasure that I introduce to you my friend, your President-elect, O. B. Hadwen.

President Hadwen then delivered his inaugural address, as follows:

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ADDRESS OF PRESIDENT HADWEN.

Ladies and Gentlemen,

Members of the Massachusetts Horticultural Society:

May I extend to you all a happy greeting for the New Year, and express the wish that the usefulness of the Society may in the New Century not only equal but surpass that of the century now closing.

The result of your annual election calls me to a duty to which I had never aspired, and which I have never sought or expected. I do not regard my election as a compliment to myself, but rather as an expression of the wish of the members that the Society may continue under wholesome by-laws, which for many years have contributed to govern the Society, and to secure the confidence of its members in the progressive work which it was incorporated to carry forward, and we may be encouraged with the feeling that it may continue as in the many past years to promote the best interest pertaining to horticultural pursuits, and to advance the science and practice of horticulture within its jurisdiction.

I recall with very great significance the work that has been accomplished within the last fifty years in all departments of horticulture, and while our fields may not be as broad as at the start, it is a satisfaction to believe there is no end to horticultural advancement, as there is no end to nature's progress.

I come to discharge my official duties to the Society with but little experience in its administration, and with but little acquaintance with the varied and complicated questions which must necessarily arise during this year in changing from our old and venerated hall to the new one now in course of construction, and while the change is inevitable I can see no way but for each and every member of the Society to work in harmony and make the best of our situation, hoping that our efforts will be crowned with success, and remembering the noble men and great benefactors that have preceded us.

And should we not ascribe much of the achievements and prosperity of this Society, and the advances made towards the object for which it was incorporated, to the energy and zeal of the men and women who have proved their devotion to it for many years by their exhibitions of Fruits and Flowers and Vegetables?

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Let me most sincerely thank you for the honor you have conferred upon me by asking me to preside over the deliberations of this Society the present year, following such a corps of noble men and women who have devoted their time and means to the development of horticulture, as a science and art since its incorporation.

Since that time an almost entire revolution has taken place in the principles and practice which has been brought out every year.

When the little colony of men who were the founders of the Massachusetts Horticultural Society held their first meeting on Feb. 24, 1829, they could but imperfectly realize the progress the Society would make in the seventy-two years of the nineteenth century, starting at a period when knowledge of the science and art of horticulture had barely dawned.

But they gave their energies to the progress of horticulture, and nearly three-quarters of the nineteenth century has marked an epoch in the science of horticulture, not only in this Commonwealth but over the whole country. An industry, vast in its extent, and accompanied by an intelligent knowledge previously not possessed in the growing of fruits, flowers, and vegetables that supply the demands and wants of an educated and discriminating people, has been built up.

It is seventy-two years since the first meeting of the Society, held on February 24, 1829.

On the 28th of April the Society voted to petition the legislature for an act of incorporation, which was granted, and approved June 12, 1829, by Levi Lincoln, Governor, authorizing the Society, to purchase and hold real estate to the amount of ten thousand dollars, and personal estate to the amount of twenty thousand dollars, which has been increased from time to time by legislative enactment to a million dollars.

The Society occupied and held its exhibitions in a number of halls, until, in 1845, it built its first Horticultural Hall on School Street, which, as time rolled on and horticultural progress increased, became crowded to such an extent that larger quarters were found imperative, and in 1865 this hall in which we are now assembled was finished and dedicated to the future use of the

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Society. It is here in this temple dedicated to horticulture that for a period of thirty-six years the Society has achieved its greatest success, unequalled, both in the practice and the science of horticulture, in any corresponding period in the country's history. The ten gentlemen constituting the building committee have all gone to their reward, save one—for many years a most notable, public-spirited benefactor to horticultural and arboreal progress.

The most prominent event of the past year is the vote which authorized the sale of this hall and the removal to the new building now being erected by the Society and expected to be in readiness for occupancy on May 1st. Many will leave this hall with feelings of deep regret, for it is here very many interesting exhibitions and meetings have taken place, where very many new fruits, flowers, and vegetables have been introduced, for the first time, to the public, and their merits have received approval, and where our associations have continued instructive and pleasant.

Heretofore, each removal of the Society has added renewed lustre to the growth of horticulture in its earlier progress. When in the new building, may we hope to show by practical demonstration that the best horticulture of the world is none too good for us, and may we keep abreast of the times with the best work pertaining to our interests. When removed to the new building let us profit by the example of the men of noble deed who have preceded us, and let the progress of the future be in a corresponding ratio with the past. It must be our study to know what course to pursue to best promote its influence. There must be united and harmonious action among us or we cannot maintain the standing which we have so long enjoyed and which has built this Society up to its present position—one of the best on this continent—and though its members by their noble deeds have continued its progress from the beginning by devoted industry, and by courageous and persistent efforts and by liberal bequests have brought the state and country from comparative ignorance to enjoy the higher arts of horticulture.

I cannot speak fittingly of all the changes or advances made by the influences of the Society, and the intelligent energy which many cultivators have devoted to the introduction of new fruits both native and foreign. There was a period when the exhibition

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tables were covered with hundreds of sorts of pears, which ultimately proved a costly experience to the enthusiasm of some growers, but a valuable object lesson to the society and to those growing pears for the profit. We have had the same experience with the apples, the peaches, the plums, the grapes, as well as the smaller fruits.

But now the prize lists, revised yearly, contain all found worthy of encouragement or cultivation, and adapted to the climate. Truly as much interest has been manifested in the introduction and cultivation of flowering plants; all that promise well receive a trial, and our plant houses and grounds contain the best to be found the world over. Many new plants from seed are shown every season which often receive the Society's gold and silver medals.

And the improvement in vegetables perhaps has enlisted as growing interest as either fruits or flowers. Very many new and approved sorts are yearly exhibited, each seemingly an improvement of its respective kind, and the question may fairly arise, is the end ever to be reached as long as nature can be assisted with the intelligence of man, and the great forces of nature become better understood? It would seem that a natural law exists whereby each kind of fruit or flower is endowed with a natural period of life, prolonged by care and cultivation, or shortened by the want of it.

Horticulture as a vocation and business is improving our lands to a wonderful extent, increasing the crops grown upon them; it is beautifying homes and landscapes; it embellishes homes with beautiful trees and flowers which are always a delight, not only to the family but to the passer-by. A beautiful home refines its inmates, gives better rational life and more of it, and is the very cornerstone that higher life and civilization rests upon.

Arboriculture or Forestry is also one of the branches in which we are interested. The finer deciduous and coniferous trees, both indigenous and exotic, are constantly being introduced and planted for the embellishment of homes and estates.

The requisite knowledge we have obtained of tree planting is giving great advantage in selection of kinds best adapted to the soil and climate, and while forest planting has not enlisted much attention in this Commonwealth, either by individuals or by cor-

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porations, still it would seem that state and towns should issue bonds for the purchase of abandoned or cheap lands unsuitable for other husbandry, when forest industry could change thousands of acres situated in this Commonwealth from waste to productive forests—lands with a profit accruing to the state, contributing both a better climate and a lumber supply which is growing scarcer and dearer as time goes on.

Now ladies and gentlemen, members of the Society, I have time to speak of but few of the interests pertaining to the Society, but with the large membership, with the large wealth, with the early prospect of a new building, with enlarged accommodations for the library, commodious halls for exhibitions and lectures, with all the modern conveniences which ingenuity can devise, very much will be expected. Need I say that the most important steps to be taken are those that will promote peace and harmony? These are fundamental to our future usefulness; there must be united and harmonious action for our progress, or we make the retrograde movement so disastrous to our prosperity and welfare.

Let us begin the new century and the new year with the firm resolve that the spirit of union and concord shall ever remain the prominent light to which our course shall ever be directed.

It will require a full allowance of aptitude and common sense to meet fairly the exigency of removal, in adapting ourselves to the new building; undoubtedly there may be some conditions other than have been expected.

It will be a year of new experiences requiring considerable adaptability in the management of all departments to work smoothly and without friction. May we hope that each department will, as far as possible, correctly outline the course of procedure to ensure success.

But whatever may be our action let the love of our Society preponderate and be carried forward with that perseverance and zeal which actuated the earlier members who preceded us, and builded it to its present standing among the Horticultural Societies of the world.

I have thus endeavored, ladies and gentlemen, briefly to speak to you in my plain way, let me hope not entirely inconsistent with the time and spirit of the occasion; and for the honor of your presence I thank you.

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Benjamin P. Ware, Chairman of the Committee appointed on the first of December to prepare a memorial of William Saunders, presented the following:

William Saunders, of Washington, D. C., since January 9, 1875, a Corresponding Member of this Society, passed on to his spiritual life on the 11th of September last. He was born at St. Andrews, Fifeshire, Scotland, December 7, 1822. His career has been most remarkable as a leader and organizer in his chosen calling of gardening. For three generations his ancestors had been distinguished gardeners in Scotland. He began as an apprentice, at sixteen years of age, under the instructions of the most noted horticulturists there. In 1845 he came to New York, and was first employed by Johns Hopkins, the founder of the University bearing his name, in laying out his estate of four hundred acres, called Clifton Park.

In 1854 he united with Thomas Meehan, at Germantown, Penn., as landscape artist and garden architect, and he designed Hunting and Fairmount Parks in Philadelphia. At this time Mr. Saunders was one of the principal writers on horticultural subjects, as many of us well remember. In 1862, when the Department of Agriculture was established, his ability was recognized, and he was appointed Horticulturist and Superintendent of Gardens and Grounds, which position he held to the time of his death, and it is admitted that the Department has not nearly exhausted the valuable suggestions which he made years before it began the work of park embellishment.

As President of the Park Commissioners of Washington he gave of his rich knowledge and experience the designs for planting that have been continued from year to year under his personal care, until the grounds about the capitol have the grandeur of a natural forest and yet show the skill of an artist in the selection and arrangement of tree planting that commands the admiration of the thousands of yearly visitors.

Mr. Saunders designed the beautiful cemeteries at Amboy and Rahway, N. J., Bethlehem, Penn., Chicago and Springfield, Ill., and also the magnificent National Soldiers' Cemetery at Gettysburgh. He was selected by Gen. Grant to design the Park surrounding the Lincoln monument at Springfield, Ill. Through his

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influence thousands of plants have been introduced into this country for experimental purposes, and probably the most important and valuable fruit ever brought from any other country was the Navel or Seedless orange, which he imported from Brazil in 1870, and by propagating liberally was enabled in 1873 to give a few plants to a settler in Southern California. The original imported tree is now in the greenhouse of the Department. Today there are thousands of acres devoted to the culture of this, the best orange for the markets all over this country.

William Saunders was the first man who suggested to the farmers of the United States the value and importance of organizing for their mutual advancement, educationally, socially, and financially; hence came the organization of the Patrons of Husbandry. He was elected the first Master of the National Grange; he wrote the preamble of its constitution, which has never been altered, and by it thousands of farmers' families have been benefitted as in no other way possible.

In consideration of this memorial

Resolved, That the Massachusetts Horticultural Society fully appreciates the great value of the life work of William Saunders to the horticultural and agricultural interests of the whole country. And especially do we mourn his loss to this Society as a beloved and highly esteemed member.

Resolved, That this memorial be printed in our TRANSACTIONS, and that a copy be sent to his bereaved family.

BENJAMIN P. WARE,
AARON LOW,
J. WOODWARD MANNING,
Committee.

The memorial was unanimously adopted.

Augustus P. Loring, Esq., from the Committee on the Revision of the Constitution and By-Laws, presented the report of that Committee in print, and explained the new By-Laws proposed. It was moved and seconded that the report be accepted and this motion was carried.

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It was moved and seconded that when the vote on the adoption of the proposed code of By-Laws is taken, it be taken by ballot, with the use of the check list, and this motion was carried.

It was voted to take up the report of the Committee section by section, beginning with the "Preliminary" portion.

A motion that speakers be limited to five minutes each was defeated.

A motion that the subject be indefinitely postponed was defeated by a vote of 31 in favor to 59 against.

A motion that it be postponed until the first Saturday in October was carried by a vote of 43 in favor to 40 against.

The appropriations recommended by the Executive Committee at the meetings of the Society on the 3d of November and the 1st of December, 1900, came up today for final action, as follows:—

For Prizes and Gratuities for the year 1901,

For Plants	$2,000.00
" Flowers	2,500.00
" Fruits	1,700.00
" Vegetables	1,200.00
" Gardens	500.00
" Native Plants	175.00
Total	$8,075.00

For the Committee on School Gardens and Children's Herbariums, for Prizes	$125.00
For the same Committee for Incidental Expenses	75.00

At the meeting of the Executive Committee on the 29th of December it was voted to recommend to the Society to make the following appropriations:

For the Library Committee, this sum to include the income of the French and Farlow Funds	$700.00
For the Committee of Arrangements, this sum to include all extraordinary expenses of said Committee	300.00
For the Committee on Forestry and Roadside Improvement	150.00

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For the salaries of the Treasurer and Superintendent of the Building, and the Secretary and Librarian $3,000.00

For the Committee on Lectures and Publication, this sum to include the income of $50 from the John Lewis Russell Fund 250.00

(The last appropriation was recommended by the Executive Committee on the 29th of November.)

The report was accepted and the appropriations were voted.

The President also reported the appointment by the Executive Committee of Charles E. Richardson as Treasurer and Superintendent of the Building, and Robert Manning as Secretary and Librarian for the year 1901.

On motion of William J. Stewart it was voted that the thanks of the Society be presented to Messrs. Kelway & Son of Langport, England, for their generous gift of medals as prizes for pæonies during the present and the last three years.

Letters were read from Ex-President Francis H. Appleton, and Arthur F. Estabrook, each presenting, for use in the new building, one of a pair of large and elegant vases loaned for the last chrysanthemum show by the Jones, McDuffie & Stratton Company. The thanks of the Society were unanimously voted to the givers for these adornments of our exhibition halls.

The Secretary read a letter from Charles S. Sargent to Ex-President Appleton conveying the offer by Mrs. J. Montgomery Sears of the sum of $350 to be used for a first and second prize for Seedling Carnations. The thanks of the Society were unanimously voted for this liberal gift.

A letter from William A. Taylor, Secretary of the American Pomological Society, in relation to the biennial session of that Society the present year, was read and referred to the Executive Committee.

The Annual Report of the Committee on Lectures and Publication and the Annual Report of the Secretary and Librarian were presented and referred to the Committee on Publication.

Adjourned to Saturday, February 2.

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MEETING FOR LECTURE AND DISCUSSION.

SATURDAY, January 12, 1901.

A Meeting for Lecture and Discussion was holden today at eleven o'clock, the President, O. B. HADWEN, in the chair.

The following lecture was delivered:

EVERGREENS FOR WINTER EFFECT.

By J. WOODWARD MANNING, Reading.

In considering a list of hardy evergreen trees and shrubs, useful for winter landscape effect, the intention is to include besides conifers those classes of broader-leaved evergreens of tree, shrub, and vine habit which are as yet seldom associated with conifers for this purpose. These include such kinds as Hollies, Rhododendrons, Azaleas, Laurels, Ivies, etc., some of which combine with their evergreen foliage a wealth of flower effect as well, rendering them useful in landscapes at all times of the year, and the intention is to bring together here a rather complete list of these plants and show how it is thus possible to extend their use and produce beautiful foliage effects throughout the winter months.

First considering the larger growing conifers, we have besides the White Pine (*Pinus Strobus*), so well known to us as our most valuable as well as most ornamental native, a selection of foreign Pines which have much of the same general effect of growth and similar foliage as *P. Strobus*, among which are the Japanese species, *P. Thunbergii*, varying in effect from the last in a somewhat more open habit and darker foliage; *P. parviflora*, of dwarfer habit, with shorter foliage in smaller tufts, and with bark of a greyish tone of color; *P. densiflora*, another Japanese species with soft dark green foliage and flaky reddish bark; the Himalayan species, *P. excelsa*, the most beautiful of the class, with densely clothed branches of a distinct pendulous habit and very long, somewhat drooping, pale glaucous green leaves in large showy tufts; the American *P. Lambertiana*, similar to the White Pine but with more densely clothed branches and a more

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strictly conical habit; *P. Cembra*, from the Alps of Europe, with rich green, densely tufted foliage and a very close, rounded, ovate habit; and *P. Bungeana*, a North China species of rounded habit of growth and thinly branched with densely tufted foliage and remarkably light colored bark, milky white in effect. All of these are hardy and useful for variety.

Taking another type represented by *P. resinosa*, our native Norway or Red Pine, we have a similar though distinct effect of heavy growth and long, dark green, densely-tufted foliage in the Austrian Pine (*P. Laricio* var. *Austriaca*) and its typical form known as the Corsican Pine (*P. Laricio*), the Japanese *P. Koraiensis*, a species of smaller growth, and the West American *P. ponderosa*, which, while a most important tree in the central and far western states, does not succeed as satisfactorily in our vicinity. It is a dense growing tree with dense tufts of long, dark green foliage. All the species mentioned under this type are of comparatively rapid growth and in their younger stages, when the lower branches are retained, form most useful specimen lawn trees.

We are prone to neglect our native Pitch Pine (*P. rigida*) which, while somewhat difficult to transplant, when once well established forms a tree capable of withstanding our most exposed seashore and inland conditions and will adapt itself to poor soils. It is, too, more apt to take on picturesque forms than any other native, often giving that peculiar, irregularly round-topped, bare-trunked effect that is so commonly associated with Italian views in which the European Rock Pine (*P. Pinea*) forms a more or less salient point. Other species of larger-growing Pines adapted to our climate and similar in effect to the Pitch Pine are the *P. contorta* of the West, the *P. tydæa* of southern New England, and *P. pungens* or the Table Mountain Pine of the mountains of North Carolina. The Scotch Pine (*P. sylvestris*) is a well known and highly useful form for dry, sterile soils, but is not as long-lived or as generally satisfactory as some other species, though very generally used in landscape planting.

In Pines of dwarfer stature than those mentioned, the Mountain Pine (*P. montana* or *Mughus*) figures as a useful lawn tree of rounded, compact habit of growth, very useful for planting in

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Picea alba var. cœrulea.

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sterile soils under all conditions of exposure. To attain further dwarfed effects in Pine growth we have recourse to the dwarf forms of *P. Strobus*, *P. sylvestris*, and *P. Massoniana*, the latter also producing two remarkable golden leaved varieties known as the Golden and the Sun Ray Japanese Pines.

Of Spruces, a plea should be entered here for our native species as in many respects best adapted for general New England conditions, and yet these have been largely overlooked, and the foreign varieties planted where the natives would have done better. The Red Spruce is an instance to the point, in which we have a moderately quick growing tree with light green foliage, reddish stems, and a ruggedness of character that ensures its successful use in seashore and other exposed situations, and our White Spruce, (*Picea alba*) is in many respects our most ornamental evergreen, combining, as it does, absolute hardihood with elegant form and a tendency to retain its lower branches better than any other evergreen, while it shows wide variation in the color of its foliage, in some instances its glaucous types proving rivals to the best form of *P. pungens* (the Rocky Mountain Blue Spruce.) While it is not as rapid in growth as the Norway Spruce (*P. excelsa*) it does possess the merit of longevity and none of the early deterioration that the latter does. The Rocky Mountain Blue Spruce has become well known and is a most useful lawn tree, though after twenty or thirty years it begins to lose that symmetry in form that at first recommends it for lawn planting. It is a mistake to expect any evergreen to show at maturity the symmetry that is usual in its juvenile stages. Many assume a distinct ornamental habit with age but are liable to demand much room for their development, and if this maturity is desired, room for such development must be allowed, thus requiring grounds of broad extent. Other spruces of high ornamental merit and American origin are the Menzies Spruce from Colorado, *P. sitchensis* or *Menziesii*, a dense growing, short leaved species from the Northwest; *P. nigra*, the Black Spruce, which is one of our most abundant northern species, comprising the major source of lumber supply for the East and well adapted for seashore planting, and *P. Engelmannii* from the Rocky Mountains, nearly like the Rocky Mountain Blue Spruce but with less rigid foliage, a tree bound to be of great value in future plant-

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ing. From Japan, *P. polita*, the Tiger-tail Spruce, is a most distinct species, with very long, rigid, spiny foliage, thickly set around the branches, and with a distinct habit combining rapid, pyramidal growth with a semi-pendulous tendency of the branchlets. *P. ajanensis* and *P. Alcockiana* are similar in effect, of dense, small branched habit in youth, with short foliage thickly set on the branches; but the latter species is particularly noteworthy in the distinct silvery cast of the under surface of the foliage, and the former species in the brilliant crimson color of its young cones. Both have a distinct upward tendency of the branches and make beautiful lawn trees. The rare and beautiful *Picea Smithiana*, from Asia, is distinct in habit from any other species; the foliage is of a silvery green and the habit is decidedly pendulous in all stages. A native of the temperate regions of the Himalayas, it is one of our most remarkable hardy ornamental trees and can be grown successfully in warm, somewhat sheltered situations. To Europe we are indebted for the Norway Spruce (*P. excelsa*), the Oriental Spruce (*P. orientalis*), and the rare *P. Omorika*. The first has been planted more than any other species and for easy culture, rapid growth and hardihood has no rival. Unfortunately it will not stand smoky atmospheres, or dry situations, and under such circumstances is short lived and becomes more or less unsightly. However, some of our finest winter effects at present depend largely on this species, and probably for many years this will have a wide popularity. This species, too, is more prolific in varieties than any other, and the Golden-tipped, Finedon Hall variety, the pendulous *P. e. pendula*, the weeping *P. e. inverta*, the long branched, grotesque form known as *P. e. monstrosa*, the open habited *P. e. alata*, and the angular branched *P. e. eremita*, are noteworthy among the larger growing varieties, while in dwarfer forms such as *P. e. Ellwangeriana*, *P. e. dumosa*, *P. e. Clanbrasiliana*, *P. e. Gregoryana*, *P. e. pumila*, and *P. e. pygmœa*, the habit becomes dwarfed until the last mentioned varieties form but carpets of dense, thickly tufted foliage. A collection of varieties of the Norway Spruce alone would go far toward producing a varied and evergreen winter effect on any private grounds.

P. obovata is a species rather closely associated with the Norway

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Tsuga Canadensis var. nana.

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Tsuga Sieboldii.

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Spruce, having a more slender growth and pendulous habit. *P. orientalis* is a most beautiful species, of densest habit, with very dark, thickly set foliage and slender branched growth, and a most useful lawn tree, somewhat slow in assuming a leader but eventually proving hardy in all but abnormally unfavorable conditions. *P. Omorika* on the other hand, while hardy, is seldom seen in New England and is confined to small, isolated areas in its native Servian habitat. Of slow growth when young, it is most interesting at present from its rarity.

Of Hemlocks the variety is greater than is ordinarily understood, for while the *Tsuga Canadensis* is a native of highest ornamental value, the Carolina Hemlock, (*T. Caroliniana*) is very distinct in habit, less dense in growth, and with broader, longer foliage. The Japanese *T. Sieboldii* in its youthful stage is a very upright species with short, dark green, thickly set foliage, while *T. diversifolia*, also Japanese, has even shorter, darker foliage, reddish bark, and a more slender habit. Western America produces two other species in *T. Mertensiana*, of very dense, upright habit, and *T. Albertiana*, similar in many respects to our native species but of more rapid growth. These two species form extensive forests in Oregon and Alaska and constitute a valuable timber supply. While all the species of Hemlocks are distinct, yet our native species will always be of greatest value for ornamental planting, combining hardihood, beautiful foliage, and graceful habit with ease of transplanting; this species is also rather prolific in varieties, of which the Sargent's Weeping Hemlock (*T. C.* var. *Sargenti pendula*) is a graceful tree of drooping habit. *T. Canadensis* var. *parvifolia*, of dense upright habit with dark green foliage; *T. C.* var. *alba spica*, oddly variegated with silvery spots; and *T. C.* var. *globosa*, of dense rounded growth, are examples.

The Douglas Fir (*Abietia Douglasii*) is one of our finest American species and forms the connecting link between the Spruces and Hemlocks. A native of the western states, where it forms immense forests of most valuable lumber, it takes kindly to our eastern soil and is a most ornamental species, preserving its lower branches to extreme age. The habit varies from a dense, broadly pyramidal tree with soft green foliage

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to pendulous forms and silvery casts of color. It will hold its own in public appreciation as one of the most desirable of ornamental lawn trees.

In the Firs we have less diversity in habit than in other large conifers, but a number of species are hardy in our climate and can be recommended. For general planting the Silver Fir (*Abies concolor*), the Veitch's Fir (*A. Veitchii*) and Nordmann's Fir (*A. Nordmanniana*) will undoubtedly hold best in popular consideration and prove most valuable. Of our native species *A. balsamea* is rather short lived and seems to resent isolated planting. *A. Fraseri*, from the Southern Alleghanies, seems more permanent as a lawn tree and its distinction is that of denser growth and more thickly set foliage. A dwarf variety of our native Balsam Fir, (*A. b.*, var. *Hudsonica*) becomes a thickly branched evergreen shrub rarely exceeding a yard in height. Western America is very prolific in species of Firs of which the Silver Fir (*A. concolor*) aforementioned is truly a prince of trees, being of rapid growth with beautiful, long, thickly set foliage, varying from soft green to most showy silvery casts, and combining as well considerable variegation in general habit effect. No tree excites greater admiration than a good specimen of the Concolor Fir.

Other western species are *A. grandis*, less robust than others; *A. magnifica*, of columnar habit with a peculiar perpendicular arrangement of the foliage on the branchlets; *A. nobilis*, of dense heavy growth with beautiful foliage varying in color from dark green to silvery blue; and *A. lasiocarpa*, closely allied but inferior to the *concolor*. These last named are all less hardy than the *concolor*. From Japan, besides that beautiful Veitch's Fir (*A. Veitchii*) of rapid growth with rich, glossy green foliage comes the *A. homolepis* or *brachyphylla*, similar in general effect and equally beautiful though rare; but *A. firma* is distinct in its flat, whorled, more conical habit and peculiarly notched, dark green foliage.

From Southwest Europe we obtain the Nordmann's Fir with its rich, glossy, thick set foliage and beautifully symmetrical habit; but the range of species includes also the Cephalonian and Cilician Firs (*A. Cephalonica* and *A. Cilicica*) of broad habit, with sharp dense foliage and a peculiar upright tendency of the branches, and

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Abietia Douglasii.

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Juniperus Chinensis var. alba spica.

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the Pinsapo Fir (*A. Pinsapo*) from the Sierras of Spain, of upright, densely branched growth with leaves of needle-like sharpness. The Common English Silver Fir (*A. pectinata*) seems similar to the American Silver Fir in its lack of adaptability to isolated planting; yet its weeping variety (*A. p. pendula*) thrives under proper conditions and is noteworthy for its grotesque ornamental effect.

The trees which have been mentioned are, with the exception of the dwarf varieties, of large size, requiring ample lawn space for full development, but as we pass to the Junipers and Cedars, Yews and Arbor Vitæs, we find trees of dwarfer stature or more columnar habit, that can be used to advantage on more restricted lawns.

Junipers, while comprising no very large growing trees, do combine great variation in habit with coloring of foliage, and are most valuable for grouping. Our ordinary Red Cedar, *Juniperus Virginiana*, is not as fully appreciated as it should be. In habit the tree varies from straight columnar to broadly pyramidal and weeping types, and the foliage ranges from deepest green to silvery and golden tones. The types recognized in nurseries at present include *J. V. pendula*, of drooping habit; *J. V. Schotti*, of upright columnar growth with light pea-green foliage; *J. V. tripartita*, with crested, densely branched habit; *J. V. alba spica*, a silver variegated form; and *J. V. glauca* or *elegans*, with distinct silvery hue. The Chinese Junipers are of dense columnar growth with glaucous foliage, showing in their varieties peculiar silvery blotch-like variegations (*J. Chinensis alba variegata*); or they are richly tinged with golden yellow as in *J. C. aurea*. A choice Japanese species, *J. Japonica*, is very distinct from the last in its fine, soft foliage, of deepest green in the type, with silver and gold variegations (*J. J.* var. *fœmina variegata* and *J. J. aurea variegata*). *J. excelsa* of Europe and Asia forms a medium sized tree of upright, conical habit with foliage somewhat similar to the American Juniper. *J. recurva*, of the sub-arctic Himalayas, is striking in its pendulous tendency and the foliage has a peculiar reddish tone, while the bark is conspicuously red. *J. drupacea* of southern Europe succeeds under favorable soil conditions and is distinct in its sharp, light green foliage set at right angles to the branchlets

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and also in its abnormally large fruits. While those mentioned are generally of tree-like growth, the dwarf and prostrate forms are useful for grouping and covering effects. Our well known creeping or Savin Juniper (*J. procumbens*) is being extensively planted and the variety *aurea* with bright golden summer foliage is of value for contrast. *J. Sabina* is equally useful for low planting and its natural habit of densely covering the ground with its matlike branches is a suggestion of nature that is being copied by the landscape gardener. This too has distinct varieties in *J. S. tamariscifolia*, with darker foliage and broadly spreading, shrubby growth; the silvery variegated form (*J. S. variegata*), and a form known among nurserymen as the Waukegan Juniper, in which the foliage is of a rich bronzy green and the plant grows to a broad cup-like shape. Another distinct class of Junipers is represented by the Irish Juniper (*J. communis*, var. *Hibernica*) which forms a small columnar tree of light, soft green foliage effect, but the Swedish Juniper, another variety, is considerably hardier than the Irish.

Arbor Vitæs, locally known as Red Cedar, (*Thuya occidentalis*) have proved of great value in their use for screens and hedges, but are not as frequently grouped for their individual beauty as they should be. A specimen plant clothed completely to the ground is a really beautiful object. No conifer has proved more prolific in varieties, and the range in color and habit is remarkable, varying from darkest shades of green to silver and golden forms, and from strict columnar habit to weeping, globular, and prostrate growths. Of these the most valuable would include *T. o. ericoides*, *T. o. lutea*, *T. o.* George Peabody, *T. o. pendula*, *T. o. plicata*, *T. o. Spathœ*, *T. o. Vervœneana*, *T. o. Wareana* (*Sibirica.*)

Other species of Thuya include the Oriental Arbor Vitæ (*T. orientalis*) with lighter, more columnar habit than our common Arbor Vitæ and with golden and other varieties. Then our western species, *T. dolabrata*, is hardy under proper soil conditions and is very distinct in its foliage and general effect. This, too, has a distinct form in the silver leaved *T. d.* var. *variegata*. *T. Japonica*, of graceful habit, and *T. gigantea*, of columnar, massive growth, are not as generally hardy as the previously mentioned species.

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Juniperus Sabina var. procumbens.

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Thuya occidentalis var. aurea.

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The Cypresses are another valuable class, comprising many varieties not adapted to our soils and climatic conditions, the Lawson's Cypress (*Cupressus Lawsoniana*) being an example of which the type and the variety *erectis viridis* alone can be grown here, and then only under special conditions. The Nootka Sound Arbor Vitæ (*C. Nootkatensis*) is somewhat hardier. On the other hand, most of the Japanese Cypresses known as Retinosporas succeed well in all but intensely sunny, wind-swept locations. Of these there is a great range in form and color of foliage and habit of growth. *Cupressus obtusa* forms a small, loose, pyramidal tree, from fifteen to twenty feet high, with rich, glossy green foliage. The variety *nana* has curiously crested foliage and a dense habit, varying in color from deepest green to golden tinges in its sub-varieties. *C. o. lycopodioides*, with rich, metallic-green foliage resembling club-moss; *C. o. filicoides*, with beautiful, fern-like foliage, and *C. o. pendula* are other distinct forms. *C. pisifera* is also productive of many varieties, varying in form from symmetrical, well branched pyramidal trees to dwarf, globular shrubs, and in color from greens through silver and gold tones. The other best varieties include *C. p. aurea*; *C. p. gracilis*; *C. p. plumosa*; *C. p. p. aurea*; *C. p. squarrosa*, etc.

Our native White Cedar is a true Cypress (*Cupressus thyoides*) and is beginning to be recognized as of some ornamental value. It will thrive on much dryer soils than its usual habitat would lead one to suppose.

The Chinese Cypress (*Cryptomeria Japonica*) is not sufficiently hardy to admit of general cultivation. Where it succeeds, however, it makes a narrowly conical tree, with reddish bark and drooping branchlets covered with short, pea-green foliage.

Of the true Cedars, the Mount Atlas Cedar (*Cedrus Atlantica*) and its silvery variety, *glauca*, are occasionally seen in sheltered locations but can hardly be recommended for general purposes.

The Yew family comprises a number of ornamental forms and the demarkation between tender and hardy sorts varies according to the nature of the soils and exposures in question.

None of the Cephalotaxi can be relied upon, though *Cephalotaxus Japonica fastigiata* is the most rugged. The English Yew (*Taxus baccata*) in shaded, sheltered locations forms a broad,

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shrub-like tree, with dark foliage, and the golden leaved form known as *T. b.* var. *Washingtonii* is quite satisfactorily hardy; the pyramidal Irish Yew, *T. b. Hibernica*, when used in shady locations frequently proves hardy, and additional forms that prove satisfactory are *adpressa*, *ericoides*, and *glauca*. The American Ground Yew or Ground Hemlock forms dense carpets in shady woods and in open, sunny situations becomes more bush-like in effect. The foliage is of a rich, pleasing green. From Japan the *T. cuspidata* is received in two forms, one with dense, broad habit and short, stiff foliage; the other of more loose and open habit and longer, softer foliage. Both are very hardy.

Japan has provided us with another beautiful evergreen lawn tree, the Umbrella Pine (*Sciadopitys verticillata*) which is perfectly hardy, forming a narrow, pyramidal tree with darkest green foliage, arranged in curious whorls on the branches. Yew-like in its depth of color and foliage effect, yet distinct in affinity, this tree stands alone in its individuality and beauty. It has a variety with golden, variegated foliage, known as the Golden Leaved Umbrella Pine.

We have now considered those varieties of coniferous evergreens of known hardihood, noting their wide range in habit of growth and hue of foliage, and are able to conceive of the many and varied landscape effects for which they may be used, more especially in overcoming the usual monotony of the winter landscape.

We are now prepared to look into the question of the possibility of variety in broad leaved evergreens, and here Rhododendrons with their magnificent floral effects so varied in color in the Hybrid varieties, ranging from purest white to deepest crimson and shades of purple, with rare instances of yellow shades, naturally assume the highest importance. By a critical selection of varieties perfect hardihood can be assured, though their demands of cool, shady situations with abundant moisture must not be lost sight of, but while *Rhododendron Catawbiense* has been given full credit for its value, some other species have been neglected and are seldom planted, though *R. maximum*, a rare native, but abundant in some sections, is becoming an important plant of late for producing immediate effects by the transplanting of well developed plants from their native thickets. *R. punctatum* has a

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Leucothoë Catesbæi.

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smaller foliage than either *R. Catawbiense* or *R. maximum* but is useful in combination with both, while *R. Wilsonianum*, *R. hirsutum* and *R. ferrugineum* form still dwarfer growths and are useful for edging groups or in rockery plantings. Our native Mountain Laurel (*Kalmia latifolia*) has been slow in forcing itself into public and extended use, but newer methods of supply have brought about a revolution in its use and we can now enjoy its unique and unsurpassed flowers at less expense than in former years. The other native species, *K. glauca* and *K. angustifolia*, are useful, though they never will come into as general use as the ordinary mountain laurel. Of Azaleas as generally known under that name, we have but one hardy evergreen representative, *A. amœna*, with its small, glossy-green foliage and showy crimson or purple flowers.

In Andromedas or the Lily of the Valley trees we have no finer species than *A. floribunda*, which gives an effect of flower throughout the winter, though actually this effect is produced by the buds which form the fall previous and remain ready to open with the first warm weather of spring. *A. Japonica* is a second species of high merit and capable of rich effects with proper use. *A. calyculata* and *A. eatifolia* are other evergreen species of value.

There is a class of broad leaved evergreens that are noteworthy more for their foliage than for their flowers, and under this head we must include the Box plants which vary in the stature of the varieties from the Dwarf Box, used in old-fashioned gardens for edgings, to small tree effects produced in larger growing varieties, of which specimens are to be found in this vicinity some ten feet high. *Laurus schipkœnsis* is hardy and can be used to a limited extent in the same manner as Laurel is used in English gardens. Unfortunately, however, cost will prevent its extended use. The Holly-leaved Barberry (*Berberis ilicifolia*) and *Mahonia aquifolia* or Ash-berry are types of a family of evergreens varying in hardihood, those mentioned, however, being perfectly hardy forms. The Fire-thorn (*Cratœgus pyracantha*) is a useful evergreen either as a hedge plant or for groups with other shrubs. While frequent complaint is heard that the English Holly lacks hardihood, we must not lose sight of the fact that we have here our native American Holly, a close peer of even more rapid growth

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and with fine broad foliage, brilliantly lightened up and enlivened in effect by its bright scarlet winter berries. Another native evergreen shrub that is much neglected is our Ink Berry, *Ilex glabra*, a plant with oval, shining green foliage and black berries, which forms a dense shrub attaining a mature height of four feet. Closely allied to this is a Japanese species, *I. crenata*, recently introduced and much sought for already. We also obtain a semi-evergreen effect from the California Privet.

Among vines we have the semi-evergreen effect of the Hall's Honeysuckle and *Akebia quinata;* the true evergreen effect of the English Ivy, which in shaded locations is occasionally seen to perfection even in this vicinity.

Broad-leaved evergreens of low growth include the Scotch Heathers, perfectly hardy subjects forming a mat on the surface of the ground and giving an abundance of bloom in shades of white, red, and purple, and some of the English Heaths such as *Erica tetralix*, *E. carnea* and its varieties, are hardy, while closely allied evergreens include *Cassiope hypnoides*, *Vaccinium Vitis-Idœa*, *Daphne Cneorum*, *Empetrum nigrum*, and *Ledum latifolium*, and European plant lovers are eager seekers for our Mayflower (*Epigœa repens*), Checkerberry (*Gaultheria procumbens*), Partridge Berry (*Mitchella repens*), and *Linnœa borealis*. The *Leiophyllum buxifolium* or Sand Myrtle is a useful plant for rockwork, and for such uses we may add the following: The Hardy Candytuft (*Iberis corifolia*, *I. sempervirens* and other varieties), the Creeping Thyme (*Thymus vulgaris*), some of the Speedwells (*Veronica incana*, etc.), *Heuchera sanguinea* with its broad, deeply indented, light colored foliage and bright crimson flowers, *Galax aphylla*, now so frequently used by the florist, in its bright glossy green or bronze red, round, toothed foliage; the Achilleas in their varied foliage and flowers as shown in *A. Ægyptiaca* with silvery foliage and lemon yellow flowers and *A. tomentosum* with matted, moss-like, soft green foliage, and golden yellow flowers; *Alyssum serpyllifolium* with silvery foliage and *A. saxatile* with broader foliage and both with golden flowers in spring. The Armerias or Thrifts give odd, pin-cushion-like effects, and vary in flower from white to crimson, and the Helianthemums or Rock Roses are a most charming class, with broadly spreading, thickly

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matted foliage and flowers varying from white through yellows to crimsons. The Saxifrages are also distinct in their broad, rounded foliage, of a thick, leathery texture, taking on shades of crimson and purple, in addition to the summer greens, and *Sedum Sieboldii* is evergreen in its effect and charmingly graceful in its habit, while the Houseleeks or Sempervivums with their rosettes of spiny, pointed leaves, thickly clustered among the crevices of the rocks are quite unique and form a stepping stone toward the use of hardy Cacti of which we have perhaps a dozen species of more or less hardihood, among which *Opuntia vulgaris*, *O. Missouriensis* and *O. Rafinesquiana* are well known and to be depended upon. Of trailing and climbing plants that have not been noted, we can add the Bearberry (*Arctostaphylos Uva-ursi*), the rare and somewhat difficult *Lithospermum prostratum* with its rich blue flowers, the Periwinkle (*Vinca minor*) with its rich glossy green foliage and blue flowers, and even the Cranberry is a useful plant, particularly in moist spots.

There is still another class of plants of which no mention has been made—the hardy Bamboos, of which a list of some dozen varieties could be mentioned which are perfectly hardy, and of which the best and most distinct perhaps are *Bambusa erecta*, *B. Veitchii*, *Arundinaria Metake* and *A. nana*. In these there exists a confusion of names at present which requires close acquaintance to remedy. Their hardihood has only been proved of late, but a colony can be seen at the Arnold Arboretum which will show their variety at least.

This list is not a complete one, but I believe will serve to show that we have a great range of evergreen material to work with, and that there are possibilities for extending the interest in our gardens far beyond the flowering period of plants, and rendering such gardens attractive at least up to that period when snow deeply covers the ground.

The lecture was illustrated by stereopticon pictures of the trees described, some of which are reproduced here.

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MEETING FOR LECTURE AND DISCUSSION.

SATURDAY, January 19, 1901.

A meeting for Lecture and Discussion was holden today at eleven o'clock, the President, O. B. HADWEN, in the chair.

The following lecture was delivered:

THE TREES OF OUR NEIGHBORHOOD.

By Miss EMMA G. CUMMINGS, Brookline.

As I have long been interested in the study of trees, I determined a few years ago to make a more intimate acquaintance with them, especially with the trees growing in this vicinity.

With an enthusiastic companion many pleasant hours have been passed walking along the roads or wandering through the woodlands, and these walks have been filled with interesting and amusing incidents.

Once we lost our way in the woods back of the Brookline Country Club, and wandered about for hours, when, hearing the sound of music, we turned in that direction and before long found ourselves in sight of the open ground of the Country Club. But to our dismay the place was guarded by policemen and we dared not cross. At length a mounted officer approached us and we asked permission to cross the land, which at first he peremptorily refused. We explained our situation, and after many questions on his part, to satisfy himself that we were not trying to gain an unlawful entrance to the scene of the races, he offered to escort us across the grounds to the Clyde Street entrance, and this, just as a crowd of people were arriving for one of the May Meetings. By this means, however, we saw a Cut-Leaved Beech, the first that we had noticed in Brookline. We have seen several others since then, but none are so large and handsome as the famous Cut-Leaved or Fern-Leaved Beech in front of the Redwood Library at Newport, R. I. It is not a native tree, but a variety of the European Beech. Trees known as *cut-leaved* such as beeches and birches, also weeping varieties, and those with purple or copper-colored leaves are all propagated from individual trees, each known

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as a *sport*. They are reproduced by cuttings, as the seedlings generally revert to the original form.

We have watched the trees in summer as well as in winter, when the study of the buds, and of their method of growth and branching is a fascinating one. Olive Thorne Miller says, "When the winds and frosts of Autumn have stripped the trees; and the leaves, which have formed the tender beauty of Spring and the glory of Summer lie prone in the dust, think not the beauty of the tree is departed. Then first it shows its undisguised *self*—its individuality."

In fact all seasons have a special interest. In winter alone, the leaf and flower buds peculiar to each species can be studied to advantage. With the spring comes the unfolding of these buds and flowers, the latter in some cases delayed into summer, when the trees in full foliage, and many already in fruit, are seen at their best. In autumn the leaves change color and fade, but in doing so the maples, oaks, and others take on a line of coloring each peculiar to itself, thus giving from season to season, and from summer to winter, a renewed interest in their appearance.

Our attention was first given to the native trees—that is, native or indigenous to the United States, and of these we found about one hundred. In consequence of our severe climate some of these trees are small, but in more favored localities they grow to a good size. Such are the Silver Bell and Fringe trees, hardly more than shrubs on our lawns, yet both are planted for their abundant showy white flowers. Such also are the Speckled Alder, and the small shrubby Magnolia, or Sweet Bay (*Magnolia glauca*) that grows in the swampy lands of Magnolia and Gloucester, but which in its southern home grows to be an evergreen tree of fifty to seventy-five feet in height. There the leaves remain on the branches with but little change of color, until the appearance of the new leaves in the spring, while in the northern states the leaves fall in early winter.

About forty-five kinds of trees are native in Brookline, the suburb or vicinity above alluded to. Some are growing in profusion, while others are represented by only a few specimens. To this number should be added a few not naturally wild in this region, but which have established themselves, and appear like

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natives. They are Willows, Buckthorn, Locusts, Apples, and Cherries. They have not, however, strayed far into the woods, but are generally found near houses.

The large willow trees that we all remember to have seen growing by the side of streams or on low lands, are of European origin, probably brought over by the earliest settlers, and that includes both the upright and weeping willows. Of our native New England willows, but one assumes a tree form, the Black willow, and that is not common near Boston.

Locusts are not seen at their best here. They have suffered greatly from the ravages of the borer; otherwise they would be exceedingly valuable as timber trees. Of all our North American trees it is the one most commonly planted in central and northern Europe. I have scarcely ever seen anything so beautiful as the streets of a city in southern Spain in the month of April, when the locust and orange trees were in full bloom. Not until then did I appreciate the beauty of the locust tree.

We ought to feel satisfied with the variety of trees growing naturally in Brookline, when we learn that there are only between eighty and ninety species indigenous to New England, and a large proportion of these that are native in other parts of New England are planted in Brookline, including some of the Maples, Oaks, Mountain Ash, Butternut and Black Walnut. According to Professor Sargent's latest estimate there are in the Atlantic region three hundred and forty-three species, and in the Pacific region, including the Rocky Mountains, one hundred and sixty, besides seven common to both regions. This makes the total number in North America north of the Mexican border, five hundred and ten. New species are constantly turning up, especially of Hawthorns, so that it is possible that the number in the Atlantic regions will have to be still further increased.

Of the trees native to the Southern States we have growing in our midst, Magnolias, Locusts, Judas or Red-Bud, Virgilia, Liquidambar, Red Mulberry, and the Bald Cypress (*Taxodium distichum*). The latter, the most interesting and rarest of this group, is represented by a beautiful specimen near Gardner Road, on the Blake estate. It is easily identified by the passer-by, as it stands alone on open ground, and is a tall, symmetrical tree, conical in

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shape. It belongs to the coniferous or evergreen group of trees, yet contrary to their custom, sheds its leaves in winter, as its name, *Bald*, or Deciduous Cypress indicates. At the South it covers vast areas of low land, and travelers who have seen it speak of its impressive height, with its branches covered with Tillandsia, the so-called Southern moss.

From the Western States we have the Kentucky Coffee tree, the American Crabapple (*Pyrus coronaria*), interesting for its beautiful fragrant flowers, and the fact that it comes into blossom ten or twelve days after all the other apples have shed their petals, yet it is less frequently planted than the Japanese varieties, the Ash-leaved maple, Osage-orange, which is used in the West and South quite extensively for hedges, and some of the Oaks. While from the North there are the Mountain Ash, Balm of Gilead, Balsam Fir, White Spruce, and Arbor Vitæ (*Thuya occidentalis*).* The Rocky Mountains furnish two trees, the Colorado Blue Spruce, and the Douglas Spruce or Fir, commercially one of the most valuable trees of the world. On the Pacific coast it grows to a height of two hundred feet and over; lumbermen say three hundred to three hundred and fifty feet. With the exception of the big trees (the Sequoias) of California, no tree equals it in massiveness of trunk or in productiveness of timber, and it is one of the most widely distributed trees of North America. I know of no large specimen in this neighborhood.

Beside these American trees we have drawn largely upon far distant parts of the world to beautify our lawns and roadways, and we can count as many, or more kinds of foreign trees growing in our midst as there are native ones. They come from Japan, China, Corea, the Himalaya Mountains, Persia, the Caucasus, Siberia, Northern Europe, and Southern Europe, bringing up the total number of species that we have seen in and about Brookline

*The Arbor Vitæ, used so much in New England for hedges, where it grows wild in wet soil, forms almost impenetrable thickets and is often called White Cedar. The local name of a tree is often very misleading. For instance, it is quite common to call any hard wood by the name of *iron* wood, and in the United States there are twelve different trees called ironwood; several kinds of trees are called cedars; six different pines are called Yellow Pine; and there are eight Balsams, and sixteen Junipers, each referring to different species, and often to different genera.

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to two hundred and sixteen. Many of the exotics have been with us so long that there is no question about their adaptability to our climate, while others have not yet been proved to be thoroughly hardy.

Until about fifty years ago, the larger part of Brookline was covered with a growth of forest trees, and in some sections they still remain. Such is an area of about five hundred acres bounded by Heath, Hammond, Newton, and Clyde streets, where are still to be seen the finest specimens of Hemlocks and White Pines, and the only Black Ashes I know of in the town are here. A portion of this land bordering on Newton and Hammond streets has recently been reserved by the Park Commissioners. Would that they also had taken about fifty acres of land which is situated between Boylston street and the Boston & Albany railroad tracks, near the pumping station of the Boston Water Works at Chestnut Hill Reservoir. It is bounded on one side by Reservoir Lane, one of the most picturesque and rural roads still left to us and is accessible to everybody who wishes to visit it, being about five miles from the State House. It has proved to be one of our favorite haunts, for here grow thirty-five different species of native trees. Among them fine large old Chestnut trees, Black and Yellow Birches, five different Oaks, and four different Hickories, — the Shagbark (erroneously called Walnut), Mockernut, Pignut, and Bitternut. The Bitternut is the most beautiful and graceful of the four trees, yet its nuts are so bitter that even squirrels, except in dire extremity, will not eat them. The Pignut was formerly regarded as nearly worthless, but now a variety has been found with a thinner shell and without the bitter taste, which it is hoped under cultivation will produce nuts commercially as valuable as those of the Shagbark.

The region around Hammond's Pond, near the Newton line, has a special interest as being the location where White Cedar (*Cupressus thyoides*), Black Spruce, Poison Dogwood, and the American Larch are growing, for they are among the rarer trees of this vicinity.

The portion of Brookline known as Longwood (*long wood*) derived its name from a narrow strip of woodland formerly extending from Aspinwall Avenue to Commonwealth Avenue, near

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St. Mary's street. This name was adopted about 1821 when the territory began to be cut up for summer residences. Until then, there were only two or three houses in this district; one was owned by Judge Sewall, for whom the present Sewall Avenue was named. Many of the oaks of this *long wood* are still standing, and here and there other fine trees.

The Boston and Brookline Parkway is an unusually picturesque drive for one so near to city limits. The natural features of the place have been made the most of, while the banks of what was Muddy River have been improved by judicious planting of native and foreign shrubs and trees. It affords an excellent place to study and compare the different maples, oaks, thorns, and so on, and it is to be hoped that in the near future enough public interest will be taken in this subject to induce the Park Commissioners to place labels on the trees — at least on the oldest and finest of them — especially the oaks, a hop hornbeam, and some black birches near the Longwood Avenue bridge, on the Boston side of the Parkway.

I once asked in the Parkway the assistance of a police officer in picking a specimen of a peculiar linden tree (*Tilia platyphyllos* var. *vitifolia*). Now it happened, as I afterwards learned, that the man was very fond of trees and knew a good deal about them. But this particular tree he did not know, and when I called it a Linden, he said, "If that is a Linden, it is different from any that I have ever seen," and to find out if I knew of what I was talking, he tested my knowledge on some of the surrounding oaks and maples. Finding that I was not altogether ignorant, he told me of his great love for trees, and how very few people with whom he came in contact knew one tree from another. After a little further talk about the neighboring trees, I left him, glad to have seen one who made it his pleasure to observe and know the trees while on his round of duty.

We in Brookline are fortunate in having within our town limits a considerable extent of high land, more or less rocky, and low, swampy ground, all favorable to the growth of a great variety of species. Large estates of wealthy residents contain many planted trees, and on one in particular, the estate of Professor Charles S. Sargent are to be found a great variety of exotics, which are not seen elsewhere.

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Some years ago foreign trees were extensively planted along our streets and avenues, almost to the exclusion of our native species. Many objections were raised, and now the tendency in planting seems to be in favor of native trees. We should all regret, I am sure, if our wayside trees were exclusively native, when we consider that it is to the European maples, beeches, elms, ashes, oaks, and hawthorns that we owe so much that is beautiful in the autumn. If you have never noticed, do so this year, that when many trees have lost their leaves and stand with bare branches outlined against the sky, there are others with foliage still bright and green, and they are pretty sure to be the foreigners just alluded to. These, all without an exception, hold their foliage longer than our native trees, and make bright, attractive spots in the landscape, at a season when our country would look dreary without them. It is surprising for how long a time the green clings to them. It is until late November and even into December, when the beeches alone are left, and on their branches the brown leaves remain, as they do on some of our oaks, all winter, or until the coming of the new leaves in the spring.

Since 1899 our town has appropriated $2000 a year for planting trees, and for the care of them along the highways. In 1895 a Town Nursery was established which for a time furnished all the trees needed. Over 6,000 trees have been set out, and many have been cut down, sometimes to prevent over-crowding, sometimes for the cutting through of new streets, or widening of others. We regret the loss of a fine group of American Linden trees, that were cut down to make room for the electric cars on Boylston street; also the loss of two rare trees, a striped maple, and a hackberry (*Celtis occidentalis*), which were cut down on account of the grading of the same Boulevard.

If some of our trees are undersize, certainly some are remarkably large, and for a stroll in the woods it is always well to include, beside a note-book, a measuring tape in one's pocket, for without actual measurements it is not safe to determine the size of a tree.

In the woods off Clyde street one day I came upon some very large trees, which at first, from their general appearance, I took

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to be oaks. To my amazement, a closer view showed them to be red maples, one of them measuring in circumference at five feet from the ground eleven feet and two inches, or a diameter of three feet and six inches. Not many red maples in this vicinity are more than a foot and a half in diameter, the comparison of which shows the unusual size of the Clyde street maple.

On the south side of Corey Hill is a very remarkable group of sassafras trees. In this State sassafras is usually a shrub or small tree, but here are half a dozen trees, the smallest of which is six feet in circumference, and the largest measures nine feet and seven inches, and has a diameter of three feet.

In Longwood, on a portion of the old wooded ridge, now the Sears estate, there are three trees with low, wide-spreading branches, of which, when first seen in the winter, we had to confess ignorance, but later recognized them to be the white mulberry (*Morus alba*), one with the astonishingly large girth of seven feet and six inches. This tree is a native of China, and is cultivated in Japan, India, and the countries along the Mediterranean for its leaves, which furnish the best food for the silkworm. Some sixty years ago the hope of establishing the silk industry in the United States led to to the greatest horticultural speculation the country has ever known. Nurserymen and farmers covered their lands with mulberry trees, planting a variety of the white mulberry, but the climate in the north proved to be too severe for this variety, and in the course of a few years most of the trees died, thus ruining thousands of people. I have tried to learn something of the history of this Longwood group of mulberry trees, but so far have been unsuccessful. It would be interesting to know whether they were planted about the time of this mulberry enterprise, which was known as the "Morus Multicaulis Speculation."

Though we have a good many large Chestnut trees within our town limits, probably the largest one is found on the Boston side of the line. Standing alone in a field, it has had an exceptional chance to spread in every direction, and although the branches are now decaying, it does not affect the enormous size of its trunk which is sixteen feet nine inches in circumference, and five feet four inches in diameter.

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On the Boston side, also, is a magnificent specimen of a Buttonwood or Sycamore tree, measuring a little less than fourteen feet around the close bark of its trunk, and very nearly holding this size to the first branch, a height of twenty feet. A fungus has attacked buttonwood trees which causes them to lose their leaves in the early summer, and then they have to put forth a second crop of leaves, which great expenditure of energy has crippled, or left them in a far from good condition. It would seem as if this tree had escaped some of the misfortunes of its kind, and thus had opportunity to increase in beauty from year to year, and its position has been somewhat sheltered by the numerous elm trees in its immediate vicinity.

These buttonwoods which are among the largest deciduous trees in America, grow to a very large size in the Mississippi Valley, where it would not be unusual to see them with a trunk three times as large as the one I have described. A lady living in its vicinity tells me that she remembers the tree fifty years ago, and that it seemed to her then, a large tree. It is often called Sycamore, and in England it is called the Occidental Plane, to distinguish it from the Asiatic tree which is called the Oriental Plane. The name Sycamore as used in England is generally applied to the Sycamore maple, while in the East a sycamore is a fig tree.

Around the shores of Jamaica Pond in Jamaica Plain, can be seen some very interesting trees, many on the land bought by the City of Boston for a Park Reservation from the estate of the late Francis Parkman and set out by that lover of trees.

The rarest and most remarkable tree is a Hybrid Walnut, on the grounds of Mr. Eben Bacon. It is a cross between our native butternut and the English walnut (*Juglans cinerea* × *regia*). The tree is supposed to have been planted between fifty and sixty years ago. "Garden and Forest" states "there are only two others, so far as is known, in the neighborhood of Boston, one in Cambridge on the Episcopal College grounds, and one in Milton near Houghton's Pond. The three trees resemble each other, and had evidently the same origin, though there is no record to tell their history, and nothing but the apparent intermediate character between two well known species, and their comparative barrenness to justify the belief that they are hybrids."

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The most remarkable, as regards size, is an Amelanchier, formerly on the Morse estate, and commonly known as the shad bush. It is usually a bush or shrub, but here it has grown to the height of thirty or forty feet with perhaps a distance of fifteen feet to the first branching. This tree would have been cut down in the laying out of the pathway but for the remonstrance of one who knew and appreciated its value.

The next in interest as regards size is a Striped maple (*Acer Pennsylvanicum*), or Moose Wood. In the Maine woods the tender young branches are a favorite food of the moose; hence the origin of its popular name.

There are Magnolias—the Sweet Bay, and the Large-leaved magnolia (*Magnolia macrophylla*). Its leaves are often from twenty to thirty inches long, and the creamy white flowers from ten to eleven inches across—flowers and leaves being more conspicuous than those produced by any other tree of the North American forests. It was introduced into European gardens a hundred years ago. Another species of magnolia (*M. Acuminata*) popularly called the cucumber tree, because its fruit resembles a cucumber, has been even more extensively cultivated in Europe and in our own northern states. We have counted nine species of magnolias cultivated in our limited area, five oriental and four American species.

Others of special interest are a good sized Silver Bell tree (*Mohrodendron Carolinum*), and a Crab Apple known as Parkman's Crab. This very tree was sent by Mr. F. Gordon Dexter from Japan about 1863, and found a home in Mr. Parkman's garden. It came without a name, and was christened Parkmani,—Pyrus is the botanical name of the genus to which apples belong, so it was called "Pyrus Parkmani." The sames species was afterwards sent to this country by Dr. G. R. Hall, an American physician long resident in Japan, and consequently it then received another name, *Halleana*. It now appears in trade catalogues under both names. It is very similar to the beautiful flowering crab known as *floribunda* from the abundance of its flowers. These Japanese crabs are particularly attractive just before the deep crimson buds expand and show the lighter colors of the interior of the flowers. A little further around the pond is a Tupelo

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tree, a species once numerous in the lowlands of this neighborhood, with its shining green foliage in the summer, changing to brilliant red in the autumn.

Unless it be an unfavorable year some of our trees are in bloom from March to December. White or Silver maples take the lead, and they may be in bloom as early as the first week in March. They are quickly followed through the month by poplars, willows, American elms, and red maples.

In April come the yellow-green catkins of the birches, the English elms, ashes, some of the conifers and the Japanese magnolias, the magnolias that bloom before the leaves are out; also the European maples, principally the Norway, with its showy clusters of light yellowish green flowers, followed by the Sycamore maple, with its hanging racemes. These are the two European maples so commonly planted.

May brings the greatest wealth of blossoms; chief among them fruit trees—pear, cherry, and the most beautiful of all, the pink and white blossoms of the apple. Closely vying with them are hawthorns and horse chestnuts, which we might think as beautiful as the apples if we saw them in the same quantity. Then cornels, viburnums, and a host of others, many not as showy, such as the beeches, hickories, walnuts, and oaks.

In June the tulip tree blooms, the wood of which is known as white wood, and is so extensively used in all parts of the country, and the Virgilia (*Cladrastis lutea*) with its conspicuous hanging white flowers, of which a fine specimen is growing in the Public Library yard. It is one of the rarer North American forest trees, but one of the most beautiful flowering, although the flowers come in profusion only every other year. Also the Golden Laburnum and one of the Catalpas (*Catalpa Catalpa*) which somewhat resembles the horse chestnut, with its upright panicles of whitish flowers; and by the last of the month the air is filled with fragrance from the blossoms of the European Lindens. These are just gone, when our American Lindens follow in July, and soon the tops of the chestnut trees are all aglow with blossoms. With one exception, the chestnuts are the last of our native trees to bloom. Being one of the last to bloom, it is nevertheless one of the first to ripen its fruit and I have heard it called the "smartest tree" for this reason.

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Now comes another interest in foreign trees; for as ours are fading, they fill the gap until autumn. There is a tree called *Koelreuteria paniculata*, having no English name, which in midsummer shows its great panicles of yellow flowers, followed in due season by light colored bladdery pods, which are conspicuous on the tree even after the leaves have fallen. There is a good specimen here in Boston in the Public Garden.

Two trees from China furnish showy blossoms in August, a month when everyone who can, leaves the city, and thereby misses the sight of these attractive trees. They are Sophora (*Sophora Japonica*), and a Sumac (*Rhus Osbeckii*). Besides two or three Sophora trees in Brookline, there is a very noticeable one on the Public Garden near the Ether Monument. The sumac is a shapely small tree growing on the Boston side of the Parkway, and can easily be seen from the electric cars, as one passes the Parkway on Huntington avenue.

In September, we would naturally say there is no tree that will bloom in this month, but yes—when the late September and October days come, there is the cheerful little star of the Witch Hazel, shining like spots of gold in the midst of decaying leaves and brown branches. Through November and even into December, when the trees have lost their leaves, these pretty little flowers are seen at their best. It is perhaps in January and February that the bright yellow and red twigs of willows and cornels, as well as the red berries of the mountain ash and hawthorns are most appreciated. These, with the conifers, offer the most striking attractions for the winter months, or until March returns, and the silver maples again greet our eyes.

Although these references have been mostly to Brookline trees, the same things can be said of the trees elsewhere. Right here in the midst of this city of Boston, the Common and Public Garden offer excellent places to study trees. There is a good variety, including some fifty-three or more species in the Public Garden alone, and many of them are labelled. There are native trees as well as foreign that blossom through successive months.

The surrounding towns offer still greater advantages. After studying cultivated trees, it ought to stimulate an interest to find them growing in wild places, and to know them is to love them.

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It is hoped that this sketch of trees will lead others to find what a world of beauty and enjoyment lies around us.

Who that has seen in the Spring the scarlet flowers and fruit of the red maple, the delicate drooping clusters of the sugar maple, the snowy whiteness of the fruit trees, set off by the delicacy and richness of the tints of young leaves of the birches, beeches, oaks, and others—who, I ask, that has seen them, can willingly spend these days in a city? It is like fairyland, if we but think so, made still more delusive by the singing of returning birds, and the occasional glimpse of some bit of their brilliant plumage as they flit from limb to limb and tree to tree but partially concealed amid the half open foliage. Who that has seen it and felt the enchantment on a bright sunshiny day, can resist it? We give ourselves up to the spell, for in our capricious climate these perfect spring days are rare, and we say to ourselves the years are too few.

Discussion.

J. W. Manning said that he had probably the largest tree of *Rhus Osbeckii* in America. The trunk is a foot in diameter, and the top spreads twenty-five feet. It blooms at the same time with the Sophora, and is very beautiful. He spoke of an elm planted on the day of the battle of Lexington and Concord on the Joshua Gowing estate in Wilmington; it is now seven feet or more in diameter, and spreads one hundred and thirty-five feet. He also mentioned a famous hemlock, eighty feet high and the same in spread, with a circumference of eighteen feet, on the Jacquith estate near the Burlington road. It was known as "the great hemlock," seventy-one years ago.

Hon. Aaron Low said that when he was in the army in Louisiana, he camped in a magnolia grove. The trees were from one hundred to one-hundred and fifty feet high and covered with blossoms. He spoke also of the bay trees, completely covered with pink blossoms before the foliage came out.

Benjamin P. Ware had been extremely interested in the lecture. Few people, he said, notice the great variety of trees about them. They lose much by not observing them. He spoke of the magnolias growing in a swamp in Manchester, the most northern location of the magnolia.

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The President said he had been exceedingly interested in the lecture and was further interested to see a lady who had such a love for trees and such a knowledge of them. He has planted a good many trees, some of which are now of stately growth. Every year brings some new tree to try. A locust tree in Worcester has a circumference of twelve feet, and bark four inches thick. It was planted years ago by Mr. Green, the grandfather of Hon. Andrew H. Green.

The Silver Bell sometimes grows to fifteen or twenty feet in height, and is a magnificent sight in flower. The White Fringe is usually a shrub, but with cultivation can be grown to a large tree.

The speaker has fifteen kinds of magnolias; among them two large-leaved, *M. tripetala* and *M. macrophylla*, if protected the first few years, will flourish well. The latter is not so hardy as the former; it grows so late as to be injured by the winter unless protected. Mr. Hunnewell has a fine specimen. It is perhaps the best of all the magnolias. The speaker has also *M. Soulangeana*, *M. conspicua*, and a new one called Alexandrina, which will probably prove one of the best. Even if magnolias fail to bloom the leaves make them worth cultivation.

The Black Walnut is not as much cultivated as it deserves to be. Its leaves are very graceful and beautiful, and it bears an abundance of fruit. There is a new variety from Japan. There are in Worcester black walnut trees ten feet in circumference, and forty feet high. The speaker has in his house a cabinet made from a black walnut tree which he planted.

In Leicester there were formerly a large number of mulberry trees in a place called Mulberry grove.

Jacob W. Manning spoke of a group of Pawpaw trees twenty feet high, growing in a garden in Lowell. Pawpaws are not always hardy but these seem to grow well. There is a White Mulberry tree in Chelmsford four feet in diameter and sixty feet high, with a spread of branches of more than sixty feet.

Robert Manning said he has two Pawpaw trees. They are quite hardy and he had no difficulty in transplanting them, but though they had blossomed, they had never set any fruit.

He wondered how many people had ever seen the young cones of the Larch trees when they first come out in the spring. The

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pistillate and staminate flowers of the larch are very charming when closely examined.

The President said that he has three varieties of larch, one European and two Japanese. The cones are exceedingly beautiful and also the foliage. The foliage of *Larix Kœmpferi* is unlike that of any other.

J. W. Manning spoke of a Basswood on the Beebe estate in Wakefield, seventeen feet in circumference and eighty feet high.

Thomas Harrison wished to call the attention of the lecturer to a Linden in Plymouth, which he thought the finest specimen in this vicinity.

A vote of thanks was given Miss Cummings for her very interesting and instructive lecture.

MEETING FOR LECTURE AND DISCUSSION.

SATURDAY, January 26, 1901.

A Meeting for Lecture and Discussion was holden today at eleven o'clock, the President, O. B. HADWEN, in the chair.

The following lecture was delivered:

A VISIT TO KEW GARDENS AND HAMPTON COURT.

By BENJAMIN P. WARE, Marblehead.

Among the many interesting subjects suggested by a journey through Germany, France, England, and Ireland, I think no one more appropriate for this Society, than my visit to Kew Garden and Hampton Court.

Kew Garden was originally a private fruit and vegetable garden of seventeen acres, belonging to the Prince of Wales, the father of George III, who began to improve it as a botanical garden and pleasure ground in 1730.

It has received additions from time to time, so that at present it contains two hundred and seventy acres, continuing as private royal grounds until 1840, when it became public and was placed

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under the control of Her Majesty's Office of Public Works, with an annual appropriation for its maintenance of £32,650 or $163,250. It is said to be the finest and most complete botanical collection and arboretum in the world. As for tree planting it can hardly be excelled. Kew Garden is seven miles from the centre of London and is accessible by steamboat, omnibus, or steam railroad.

The surface is undulating, with carriage drives around and through the grounds; with broad graveled walks in various directions, opening long vistas through well grown trees, some in rows but generally irregularly planted, with plenty of room for the full development of each tree. Every variety of tree, shrub, and herbaceous plant is plainly labeled, giving an admirable opportunity for study. It was intended that every variety that would grow in that climate should be represented in its very best possible condition, and as the winters in England are much milder than ours of New England many more varieties may be grown there than here.

It is very delightful when traveling in a strange land, to meet any one from your own country, even though an entire stranger at home. I found it even so, to see in this collection specimens of our beautiful white pine, hemlock, spruce, elm, mountain ash, white ash, and oaks; and among the herbaceous plants, our fall asters and golden-rod in variety, and many other familiar friends in perfection, and not excelled in beauty by those of any other country. As tree planting began there more than one hundred and fifty years ago, some of the trees are of large size. Among the more noticeable are a dozen or more Cedars of Lebanon of immense size, four or four and one-half feet in diameter. As they stand well apart, and were allowed to branch out near the ground, they grow in a form peculiar to that species; with their deep green, compact foliage and majestic forms they readily command the attention and respect given to this tree by early scripture writers, who frequently used the Cedars of Lebanon as symbols of strength, beauty, and grandeur. The fragrance and durability of its wood caused it to be sought and largely used in building King David's Palace, and Solomon's Temple. So abundant was it on Mount Lebanon, as to cover it with forest growth, affording material for

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four score thousand hewers, in getting out timber for the temple. But alás! like our own forest, they have disappeared. In the sixth century Justinian found it difficult to procure cedar enough to cover a single church. Belon, in 1550, counted but twenty-eight trees; De la Roque, in 1588, found twenty; Pococke, in 1740, found but fifteen in that vicinity, the largest sixteen feet in diameter.

Near this group of cedars in the garden is an immense Scotch Pine, towering above all others, with a clean trunk, about one hundred feet to its first branches.

As an arboretum, Kew Garden compares favorably with our own Arnold Arboretum. The shrubs are in such great variety, so well grown and so plainly labeled that they afford a superior opportunity for study. Rhododendrons are especially fine here, as well as in other parts of England.

A wonderful collection of over six thousand flowering, hardy herbaceous plants, embracing more than one thousand varieties, may be seen here, all distinctly labeled; among them the original wild chrysanthemum brought from the hills of China one hundred and five years ago. It was the first introduction into Europe, making our magnificent chrysanthemum shows possible, as well as the one held last November at the Royal Aquarium in London, where its small yellow flower was shown in contrast with the latest triumph of the florist, a flower fifteen inches in diameter.

The most noticeable structure in the garden is the Chinese Pagoda, built in 1761. It is one hundred and sixty-one feet high, a magnificent structure, made especially conspicuous by the lay out of the landscape, so that it may be seen directly in front from several points, through long irregular lines of trees. Another very prominent object is the flag staff, a single spar of Douglass Pine brought from Colorado, supposed to have been two hundred and fifty years old. It is one hundred and sixty-three feet high, with twelve feet under ground, enclosed in solid brick work, to insure its security from wind and decay.

The palm house is probably unequaled in beauty and grandeur the world over. It is three hundred and sixty-two feet long with an ell on each side of fifty feet, one hundred feet wide, sixty-six

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feet high, and filled with a great variety of palms and plants requiring the same conditions. Many have grown as high as the top of the building, and all are in perfect condition.

The horticultural museum is a large three story brick building, containing an herbarium, library, and many horticultural curiosities of interest. Between these two principal buildings is a very beautiful artificial pond, which makes a frontage for each building. The pond is alive with goldfish, swans, pelicans, ornamental ducks of the most beautiful varieties, and other water fowl. Around this pond are beds of flowers of the most brilliant and showy kinds. The beds are of artistic design and planting, with the intent of making this part of the garden the fairy scene that it is, beggaring description.

There is a wood museum, containing specimens of wood from all of the British Colonies, and other countries, with some curious freaks of growth; also seventeen or more greenhouses adapted to the needs of different families of plants supplying each with the necessary conditions for their best development. One of them is devoted to exotic water lilies, among which the *Victoria regia* is prominent.

Another is devoted to the cultivation of the citrus family of fruits, and another to the cactus in great variety. Among the many varieties of trees, some are of very curious habits of growth. Especially noticeable is the Chili Pine (Araucaria,) sometimes called the monkey puzzle, I suppose from the difficulty a monkey would have in climbing through it. A portion of the ground is set apart as a wild garden, with a perfect tangle of trees, shrubs, and herbaceous plants, in an apparent haphazard manner without order or design, and yet displaying much hidden artistic skill in the arrangement.

A conveniently designed temperance house for the benefit of the crowds of visitors during the season is centrally located amidst this beautiful garden scenery.

Miss Marianne North, an exquisite flower painter, devoted her life to travelling the world over, painting from nature flowers found in her extended travels, thus producing a true picture of each. Her collection contained eight hundred and thirty-three pictures, which she gave to the garden for the benefit of the public. They

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are arranged in a brick building which she provided especially for them, adding very much to the beauty and interest of the garden. Where there are no flower beds the surface is a beautiful English lawn, such as we have often read of; so closely shorn, so green, so soft is it, that one is reminded of a velvet carpet. The signs are not "keep off the grass," but "please do not tread upon the edge of the grass," which is kept square and clean cut. When any portion of these lawns shows signs of exhaustion, the sod is carefully taken up in rolls, a heavy coat of old stable manure forked in, then the sod is replaced so carefully that no sign of its removal is noticed.

Kew Garden is so accessible, so beautiful, and so instructive, that it is not surprising that as many as ninety thousand people have visited it in a single day.

The Palace at Hampton Court is fifteen miles distant from London, and seven miles beyond Kew Garden, and is reached by the same lines of travel, continuing through Kew and Richmond by omnibus, or, if one prefers, by a coach and four-in-hand from Piccadilly Circus on Sunday mornings. The approach to the Palace is through Bushy Park of four hundred acres, by a broad avenue about one mile long. On each side of this avenue are fine rows of horse chestnut trees set fifty feet apart. These trees are two or three feet in diameter and about eighty feet high and cover a space, including the avenue, with their shade not less than eight hundred feet wide. Fancy them in May, when in full bloom; such a display of beauty and magnificence would alone repay one for going to London to see it. This park is occupied as a deer park and there are hundreds of deer as tame as sheep, feeding or basking on this immense lawn, singly or in groups. The Palace is an imposing structure of brick with stone trimmings, forming three quadrangles, surrounding an open court on three sides. Two of these were built by Cardinal Wolsey early in the fifteenth century, and when finished presented by him to Henry VIII. The beautiful Eastern front was built by Sir Christopher Wren in 1689 for William III, and is three hundred and thirty feet long. Much of English history during the reign of the Tudors was associated with Hampton Court; Edward VI was born there, and there his mother Queen Jane Seymour died. It was the prison of Charles I for many years, and Oliver Cromwell delighted to make it his

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residence for much of his time. There are at the present time thirty-six rooms open to the public in the Palace; they are all finished in oak, the door and window frames richly carved. The walls of all are hung with fine paintings of various subjects. Full length portraits of kings, queens, and other famous persons are numerous among the works of the old masters. One room is wholly devoted to the pictures of Benjamin West; another contains the famous cartoons of Raphael. As the rooms are all connected by doors, they appear like a continuous picture gallery, containing in all eight hundred and ninety-seven pictures. Each room had its special use when occupied by the royal families in years of long ago, and still retains most of the furniture then used. The Queen's sleeping chamber contains a richly carved bedstead eight feet wide (the usual breadth of royal bedsteads throughout Europe) with a very high canopy at the head; the mattresses are covered with satin, and the other furniture upholstered with rich silk velvet.

The great hall built by Henry VIII, from its size, height, gorgeous stained glass windows, elaborately wrought roof, and walls hung with immense elegant tapestries, is decidedly the most magnificent hall of any in the Tudor Palaces. For three and a half centuries it was used for state functions, royal banquets, receptions of foreign ambassadors and theatrical performances. It is said that here King Henry often sat in state or danced with his favorites, Jane Seymour and Catharine Howard.

The Queen's Chapel is still in use for the people living in the vicinity. I attended the High English Church service the Sunday that I was there.

The garden of forty-four acres was laid out on each side of the Palace by William III. The right side, called the pond garden, is in the Dutch style, with elevated terraces, sunken paneled lawns, arcade walks formed by flowering shrubs, flower beds, and a goldfish pond. And here is the cold grapery, containing the famous Black Hamburg grape vine one hundred and thirty-two years old. The stem at the entrance of the glass house is one foot in diameter. There it sends out three or four branches three inches in diameter. These are trained so the whole roof of one hundred feet long and forty feet wide is completely covered;

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and so carefully pruned and thinned are the bunches of grapes, that the crop of twelve hundred clusters hang at about equal distances of one foot apart from every part of the vine. As I saw them, fully ripe and well colored, they presented a sight that I never shall forget.

These grapes were subject to the late Queen's orders, who sent them to hospitals and to the sick, but she had graciously refrained from having a single bunch cut until I had seen them in their full glory. This enormous crop is maintained by an annual application of a heavy coat of old stable manure and ground bone, which is forked into a plot of ground, about as large as the grapery, just across a graveled roadway, the main roots passing under the road to this feeding plot.

The part of the garden on the other side of the Palace is differently arranged, and principally planted with larger shrubs and trees. Here is a maze, and unless you have your nerves well under control of a strong will power I would not advise any one to enter alone, for there is danger of a panic that might prove injurious.

Standing in front of the beautiful and imposing principal façade of the Palace one looks out upon a vast expanse of park scenery of eleven thousand acres. In the foreground is a fountain and in front is the Yew Park, planted with Yew trees two hundred years ago. These with their very thick, deep green foliage, the pistillate plants bearing an abundance of bright scarlet berries, present a very beautiful and unique feature in the landscape. They seldom grow higher than thirty feet but with a very large thick trunk. They live to a great age. There are several in England supposed to be from seven hundred to a thousand years old. There is one at Darley, Derbyshire that is fifty-five feet high, with a trunk nineteen feet and three inches in diameter; others, in Scotland and Ireland, are of about the same size, and are supposed to be as old as the Christian era. Virgil and Pliny both declared that the Yew tree was neither useful nor ornamental, but noxious and deadly poisonous in both foliage and fruit, while others have since said with equal authority of the foliage, that even its shade might be injurious, but the berries may be eaten with impunity. I ate of them without injury. The timber is comparatively indestructible and is of a beautiful brown color, and

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takes a fine finish. It was formerly much sought for as being the best material for the long bow, used by the ancient English archers. It was regarded with great superstition by the heathen nations of old as being associated with death, but by Christians as emblematical of immortality, and, therefore, it has been much planted in cemeteries.

Opening out from the Yew Park, fan-like, are five broad graveled walks about fifty feet wide extending as far as the eye can reach. The middle one ends in a pond of the same width, well stocked with fish for the angler, and used as a skating rink in the winter. These walks are lined on each side with full grown English elms and linden trees about eighty feet high, with trunks from two to four feet in diameter. The branches of these trees are trimmed up uniformly about eight feet from the ground, showing an even uniform surface under the trees for the whole distance, a system of tree planting entirely different from that at Kew Garden, but beautiful in its oddity.

Far beyond, out of sight, is the Queen's farm, where formerly she kept her dairy, and bred Durham and other cattle, besides choice swine and sheep. She had relaxed her interest in those somewhat, but continued to breed cream-colored horses for her state team of eight to be used only on great State occasions, and three-quarter thoroughbred saddle horses, of which fifty or more are required for use at the Mews or royal stables at Buckingham Palace in the city of London.

On motion of Thomas Harrison a vote of thanks to Mr. Ware for his interesting and instructive lecture was passed.

At the close of the lecture twenty steriopticon views in Kew Gardens and vicinity were given by John K. M. L. Farquhar, which added much to the interest of the lecture.

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BUSINESS MEETING.

SATURDAY, February 2, 1901.

An adjourned meeting of the Society was holden at eleven o'clock today, the President, O. B. HADWEN, in the chair.

The Annual Report of the Committee on School Gardens, School Herbariums, and Children's Herbariums was presented by Henry L. Clapp, Chairman, who gave a verbal abstract of the Report. The Report was accepted and referred to the Committee on Publication.

Joseph H. Woodford, Chairman of the Committee of Arrangements, reported the following vote, which had been unanimously adopted by that Committee:

At a meeting of the Committee of Arrangements held this day, February 2, 1901, it was voted to omit the exhibitions scheduled to be held on May 4th, May 18th, June 5th and 6th, and June 15th, owing to our having to vacate this building on May 1st. The Society's first exhibition in the New Hall will be the Rose and Strawberry Exhibition on June 20th and 21st.

J. H. WOODFORD,
Chairman Committee of Arrangements.

A copy of a letter from Charles S. Sargent of the Building Committee to the Chairman of the Committee of Arrangements, relating to the time when the new building of the Society would be ready for use, and a letter from William J. Stewart, Secretary of the Building Committee, to the Secretary of the Society, on the same subject, were read.

The report of the Committee of Arrangements was accepted, and the changes adopted by that Committee, as reported in the above vote, were confirmed.

Ex-President William C. Strong, to whom, as a sub-Committee of one, the matter of the meeting of the American Pomological Society was entrusted by the Executive Committee, to which it had been referred, stated that it was not deemed advisable to appoint delegates at the present time, but recommended that the Secretary notify the Pomological Society that delegates will be appointed.

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Mr. Strong also, as Chairman of the Committee appointed on the 3d day of March, 1900, to confer with the Boston Co-operative Flower Growers' Association in regard to holding the next Carnation Exhibition of that Association in Horticultural Hall, reported that the Committee had conferred with the Flower Growers' Association, but that no conclusion had yet been reached.

On motion of Ex-President William H. Spooner, it was voted that the use of one of the Society's Halls be offered to the Co-operative Flower Growers' Association for their Carnation Exhibition the present year.

Mr. Spooner also moved that a Committee of three be appointed to procure a portrait of Ex-President Appleton. The motion was carried, and the Chair appointed as that Committee, Mr. Spooner, Benjamin M. Watson, and C. Minot Weld.

A letter was read from Charles E. Cotting offering to the Society, in behalf of the Trustees of the Paddock Building, the purchasers of the Horticultural Hall estate, the statues now on the building, to be removed by the Society prior to the termination of the existing lease; also offering to give and deliver, when the building is torn down, any box which may be found in the corner stone.

It was voted that the offer be accepted on the terms mentioned, and that the thanks of the Society be presented therefor; also that the Secretary inform Mr. Cotting that the Society would be glad to retain the two marble tablets in the staircase hall, commemorating the foundation of Mount Auburn Cemetery by the Society and the erection of the present building.

The following named persons, having been recommended by the Executive Committee for membership in the Society, were on ballot duly elected:

HENRY ILLENBERGER, of Brookline.
DAVID WELCH, of Dorchester.
MISS JEMIMA R. WILDER, of Dorchester.
MISS GRACE S. WILDER, of Dorchester.
JAMES B. SHEA, of Jamaica Plain.
MRS. THACHER LORING, of Brookline.

Adjourned to Saturday, March 2.

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MEETING FOR LECTURE AND DISCUSSION.

SATURDAY, February 9, 1901.

A Meeting for Lecture and Discussion was holden today at eleven o'clock, the President, O. B. HADWEN, in the chair.

The following lecture was delivered:

GROWING AND EXHIBITING VEGETABLES AND FRUITS.

By HERBERT R. KINNEY, Worcester.

This subject is one of such large proportions that I shall not try to cover it in any systematic way, and shall not consider the raising of either vegetables or fruits otherwise than to speak of certain methods and conditions that are likely to give desired results.

Perhaps there never was a time since the existence of horticultural and agricultural societies, when there was greater need of giving this subject careful consideration than at present. In the early agricultural and horticultural exhibitions there were neither so many varieties shown nor so much money distributed, and the exhibitors were more what might be called amateurs than at the present time, and I, for one, am very sorry to see the amateur exhibitor being driven out by the professional. I will admit that I am one of the latter, and fear that I may be obliged to stay in that class, but my sympathies are certainly with the amateur.

It might be well to explain my idea of the amateur and professional exhibitor before going further. I shall consider the professional exhibitor one who exhibits for the dollars there are in it, and the amateur for the satisfaction of exhibiting exceptionally fine specimens and who would under no consideration enter an exhibit unless it showed considerable merit. The true amateur does not object in the least to being beaten, because when he is beaten he can see that there is still a chance for him to improve, and that is the height of his ambition. He is not considering the value of the prize, but rather the perfection of the fruit or vegetable he is growing. Not so with the professional; while he likes to show good specimens, he is ever keeping an eye on the cold cash, and he is willing to have his name on exhibits that he real-

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izes are not a credit to him because he knows that he is likely to draw a prize on only common stock, sometimes, and the dollar is what he wants.

I should not wish to have a society discriminate for or against either the amateur or the professional exhibitor, for both are needed to make up a large exhibition and they both get benefit from meeting and from the exhibitions, but it makes it more difficult to run an exhibition satisfactorily than it would be if the exhibitors were either all amateurs or all professionals. I think you will find that the strictly amateur exhibitor is becoming less and less a factor in vegetable and fruit exhibitions every year, and if such is the case, it is certainly time we were giving the subject serious consideration. It is not because the professional grower cannot grow as good specimens, or that he cannot arrange them as well as the amateur, that we should strive to keep the latter with us, but because he is carrying out the ideas of the founders of the horticultural and agricultural societies. If there were no large money prizes there would be no professional exhibitors, and no money prize is really worth any more than the face value of the prize; but if the prize had no money value the competitors might spend any amount to secure it. I am of the belief that every large society should offer some prizes, every year, that have other than a money value. There would be no use in offering such prizes if there be no interest in amateur horticulture, but it seems as though there should be gentlemen in this society who would like to compete for a gold medal, who would not think of trying for a money prize. Do not think that I would advocate substituting medals or silver plate for the money prizes offered at the present time, but if we could have one amateur prize at each of the large exhibitions and have it competed for with the same spirit that some of the cash prizes are, it seems to me it might revive an interest that I fear is fast dying out.

The offering of large money prizes has had a tendency to foster professional exhibitors, not only about the home of the societies offering such prizes, but back in the country as well, and it is a very great benefit often to the country exhibitor to attend the large exhibitions and compare his produce with that from other sections of the state. This makes it very important that these

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large exhibitions be run in the very best possible manner, as the country exhibitors are many of them close observers, and when they go home it is very desirable that they carry the idea that the large society is run on broad principles and that the best exhibits get the best prizes. There is nothing so bad for any exhibition as to have the exhibitors feel that there is any partiality shown in the awarding of prizes or that the judges will not give every one an equal chance. It is usually claimed that there will be some kicking anyway, but those who get the prizes will be satisfied. The conscientious exhibitor, however, only wants the prize he deserves, and if he gets more he loses confidence in the integrity or judgment of the judges, and his opinion is very much the same if he does not get what he thinks he should have. The public is equally disappointed if the judging is bad.

Our subject is the growing and exhibiting of vegetables and fruits, and you may ask why I am considering judging. The amateur exhibitor may care very little for the opinion of the judges, but in my opinion he is not a large factor in exhibitions of today. The professional exhibitor spends more thought on what will please the judges at the exhibition where he intends to compete, than on the actual merits of the exhibits he puts on the table.

I prefer a single judge to award prizes, because if one man has to make the decisions he must use due care and have a reason for making them, bnt if there are a number of judges the decisions are usually a compromise, as no two will agree every time if the competition is close, and in such cases you get no one's judgment.

There can be no general rule regarding the proper size of vegetables or fruits for exhibition, but the present custom of exhibiting vegetables of a smaller size than formerly, is a great improvement. This applies particularly to such vegetables as potatoes, beets, carrots, and parsnips, as the tendency of these is to grow too large; but with such as salsify and horseradish, the larger they are (providing they are fairly smooth), the better. To have any of these roots in good condition to exhibit, they should be matured, or nearly so, and to get the plumpness and color which is desirable they should have an abundance of potash. In fact, I think that potatoes, carrots, and parsnips do better if grown on

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a good fertilizer. A good coat of manure the season before, seems to do them good. Beets and horseradish will do nicely on heavily manured land. Carrots that are sown late seldom make nice exhibition specimens. They may attain good size, but lack in color and fulness. It is as necessary to have a carrot ripe to be in prime condition for the exhibition table as it is a strawberry. Many would say that to compare it to the Baldwin apple would be much better than to the strawberry, but I think there are few of our vegetables that are in their prime for the exhibition table for a shorter time.

The one vegetable of the rich and the poor that is in use during the whole year and on nearly every table once a day is the potato. It is generally grown by almost every one who has a garden, with the exception of those located near large cities, where the land is very expensive and there is a very large quantity of stable manure used; still it is not shown to perfection as often at it should be at our exhibitions, yet much better now than formerly. The tendency to give the prizes to extra large specimens is not encouraged now, and, as I have intimated before, the exhibitors are after prizes, so if the judges recognize only medium-sized, smooth specimens, those will soon be the kind exhibited. While I say "medium-sized" it will do to go rather above that size if the potatoes are good shaped and show no signs of coarseness, a defect which should never be encouraged. Whatever the size, the skin should be full. To grow potatoes that have all of the good qualities and none of the faults is not always an easy matter, and after they are grown it is often hard to find twelve that are alike, even when the crop is good. One can find two or three that will just suit him, but it is very often necessary to throw these aside and take some that are not so good, as a few extra nice specimens have a tendency to make poorer ones look poorer than they really are. It is probably much easier for any of us to recognize a nice plate of potatoes, than to tell just how to produce them. On general principles, potatoes are smoother and of much better quality when raised on new ground, not necessarily virgin soil, but the first or second year after breaking up, and where the animal manure, if used at all, is plowed well to the bottom and the potatoes are *largely* grown on chemicals or

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fertilizers. A good, acid-cut fertilizer I consider best. A liberal amount of nitrogen and potash are essential, and there should be some available phosphoric acid; a combination of 4 to 5 per cent of ammonia, 7 to 8 per cent of available phosphoric acid and 7 to 8 per cent of potash, I think would give better returns generally than one not so evenly balanced. If you know exactly what your land lacks you can, perhaps, make up the deficiency; otherwise it is doubtful economy to try to save money by buying low-grade or poorly balanced fertilizers.

I have raised potatoes of fair quality and smoothness on very heavily manured market-garden land, but they are not a crop that responds to heavy manuring. To grow the best and handsomest potatoes possible, I would use no manure the year the potatoes are planted, but from 1,000 to 2,000 pounds of good fertilizer per acre; about one-half broad cast and one-half in the drill, thoroughly mixed, using large seed cut to two eye pieces, and planted about the first of May in drills from eighteen to twenty-two inches by thirty to forty-two inches apart (the latter distances for the late varieties). Give thorough cultivation and plenty of Paris green and Bordeaux mixture, and you should have potatoes of the best quality.

Perhaps there is no vegetable that is more often exhibited and wrongly judged than celery. Celery, to be good for the table or market, should have a head as much as lettuce or cabbage, and to get this head it is necessary to sacrifice the older leaves; in fact, as you bring the head to perfection you lose all of the outer leaves, but the same is true of lettuce or cabbage, and who would think of giving a prize to lettuce or cabbage because it had a great spread of leaves? It may be possible to sell these great bunches of celery leaves, but I doubt whether there is a dealer inside Faneuil Hall Market who would buy one; they know celery there. It seems to me that every horticultural and agricultural society should try to encourage the people to raise the best of produce, and that we have not always done this in regard to celery. Bunches of what I shall call "celery leaves" may occasionally be picked from among heads of good celery but the methods of growing the two are entirely different. To grow the bunch of celery leaves, the plants must have considerable

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room and a long season of growth. They may grow quite rapidly at first, but should continue growing less and less as they near maturity, because a sudden start will cause the heart to develop, the outer leaves to soften, and a head will then begin to form. The older gardeners can well remember when there was a demand for big heads of *celery*, not bunches of celery leaves. I have seen them and have raised some, but do not try to grow them now as they are not wanted in the markets. I would not object to the awarding of prizes to large heads of celery, for it is one of the few vegetables to which size may be considered an advantage, but the point is *size of head*, not of *plant*. I have seen bunches of celery on exhibition which were from six to eight inches in diameter that had practically no heart. It should be the duty of the judges, where such celery is shown, to pick off the outer leaves from one of the heads so that every one can see how utterly worthless it is.

As I have spoken about growing the bunch of celery leaves, perhaps it would be well to say a few words about growing the heads of celery. The method early in the season makes but little difference except in regard to the size of the head. If you would have a shouldered head of nice proportions and not too tall, the plants must be set ten or more inches apart; but if you want nice celery for family use or market, from four to six inches should give a more satisfactory crop. To get celery of the best quality it must be grown rapidly and it is quite important that it should take a little extra start when we begin to blanch it. Celery that is banked with earth gets this start from the cutting of the roots, and the chance that those roots which are left get to work up into the soft earth of the bank. Perhaps the best way to start Golden celery that is to be boarded, is to give a good watering and work the ground about the time the boards are set up. This gives celery of fair quality; but no method will give as good celery in the early fall as can be produced later when the weather becomes cooler. Celery grown in this way will not keep so well as that of poorer quality.

There is one more point in the exhibition of vegetables to which I wish to call your attention, and that is, the danger of losing our type or of recognizing varieties that have no type of

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their own. At the present time when every seedsman has to have something new almost every year, if you consider how many there are in the seed business you will see that our so-called *varieties* multiply rapidly, and while some of these may be entirely new a very large part of them are practically like some varieties that are already in cultivation. These exhibitions are supposed to be run to educate the exhibitors and the public, but if they are to be of any use in that line, the judges must see that exhibitors hold strictly to the type of the variety they exhibit. Exhibitors will often say that "I bought the seed for such a variety," and think that should be sufficient. While that may be all they can know about them at first, the judges should satisfy themselves about the type, and then stick to it. To illustrate this I will mention the tomato, of which there are a great many varieties of the same color, but with several distinct types.

I think that in the fruit exhibitions we find rather more of the amateur spirit than in the vegetable department, but the professional is here also, and is usually able to secure his full share of the prizes. In the vegetable exhibition as a rule we cannot consider size of specimens a very important factor, but with fruit it is different, as there seems to be no objection to large size in any of our fruits, provided that they have color and smoothness, and for that reason we may consider size of very considerable importance in fruit of all varieties for the exhibition table, but there are other things that must be considered. All dessert fruits, to be of value for market or attractive for home use, must be handsome in color and form. Cooking fruit, to be of the best quality, must be fair and fine-grained. So we have several things other than size to consider in the fruit exhibits, and I think it important that the judges of fruit at our larger exhibitions should try to encourage the growing of fruit of the best quality as well as of largest size; for instance, a very large apple of poor color and quality is of but little value, and a small strawberry of fine color and quality is equally undesirable, from a commercial point, at least, so we should consider that size and color must go together to make a perfect fruit.

Very many varieties of fruit are shown, especially at our agricultural fairs, long before they should be ripe, and there is an

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endeavor to get a color similar to what the fruit should have when ripe, but this is all wrong, because we do not want Baldwin apples ready for the table in September, or Northern Spy in October.

Judges who consider color the most important quality of fruit, are likely to do more for the good of the fruit interests than those who consider size of the first importance; but the ideal fruit is one of good size and good color.

There is a difference of opinion among fruit judges in regard to imperfections. Some claim that a plate of fruit is no better than the poorest specimen, and they will often throw out a plate because of a defect in a single specimen, when those remaining are very much better than any other whole plate. Other judges claim that if the eleven are better than any other twelve, then they should have the prize. For my own part, I believe the latter are right, because it is the growing of the fruit we wish particularly to encourage. The nearer alike all specimens on a plate of fruit are, the better, but we must not let any of these technical points divert us from the objects of the societies, which were not organized to make professional exhibitors, but to encourage the growing of better produce. It may seem that I am giving too much attention to this part of the exhibition, but it is one that we should keep constantly in mind.

While size and color are in general the two most important qualities in the fruit exhibition, when we consider the peach, we should use a great deal of care, or we may encourage the exhibition of the product of disease. Perhaps there is no other fruit that is increased in size and color, as is the peach, by disease. It has been so that there was no use in showing sound peaches at some exhibitions, as the prizes were all given to prematurely ripened fruit. I have seen prizes for Early and Late Crawfords given to peaches between which one could hardly tell the difference. It is not uncommon to see the prizes given to ripe Elbertas and Crosbys early in September, when the sound fruit shows no signs of ripening. These displays of diseased peaches may take better with the public and are certainly more of an attraction than good sound fruit, but I believe they are against the promotion of horticulture.

Mr. Kinney, in the course of his lecture, exhibited a root of

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celery showing the crisp heart and worthless, because tough and fibrous, outside stalks. He also exhibited an ideal Baldwin apple, which showed red in September and has since brightened. He said that we must consider size, whether we go above or below the normal. The smaller specimens are usually brighter in color and finer in grain than the larger.

Discussion.

Hon. James J. H. Gregory said that he had listened to the lecture with great interest and profit. There is a class between the amateur and professional,—the farmer, who exhibits partly for honor and partly for money. Mr. Gregory said that he is perhaps the largest exhibitor in Essex County, and he is convinced that there is no money in exhibiting vegetables. He never got more than dollar for dollar by exhibiting. There has to be a great outlay of time in selecting a dozen specimens of the same size. In this Society there is a varying standard. Weight and size are too much the standard here; quality should be the standard. We would not buy the squashes and onions which take a prize here for our own use. Prizes for squashes are often taken by specimens which are not ripe. If drawn in where the stem is joined, the squash is ripe. Hubbard squashes weighing seven or eight pounds used to take prizes which are now awarded to overgrown specimens that are worthless, and the societies are responsible for it.

He would depend largely on potash rather than on barnyard manure. If potatoes are thin you can plump them by giving them potash. He would give as much as ten per cent.

Thomas Harrison said that a potato thick in the middle is hard to cook. The shape of the potato is of importance. One long, and even all the way through is more easily cooked. He prefers the flat varieties.

The lecturer said that any potato wants to be as thick as the variety calls for or you get a poor potato. Some potatoes are naturally thick like the Hebron.

Hon. Aaron Low did not agree with Mr. Gregory as to the awards. The Committee have made the rule that onions, for instance, should correspond to the ideal of the variety shown. When

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there have been large displays of foreign onions they have always given preference to the Danvers.

Varnum Frost thought Mr. Gregory a little wrong in what he said about squashes. He knows a ripe squash as well as Mr. Gregory. He used to tell one by sticking a knife in; now he strikes it with a stick. He says there is no money in getting up a collection,—it takes too long to find specimens alike.

The lecturer thought that low ground that is strong, so that it will not wash away or blow away, is good for apples.

Mr. Frost said it is a simple matter to grow strawberries. Nine-tenths of farming may be learned from observation. Prizes should be awarded for the largest and handsomest strawberries. The Marshall is the best of all. Many people are disappointed in the Marshall because they do not know how to grow it. It will not do to set the Marshall on land that is sour. It must not be set on land that settles and will be hard. The rows should be four feet apart and the plants eighteen inches apart in the row. The plants should be elevated two or three inches above the level of the row. Set the plants in August; if as late as the middle of August, let no runners grow. Avoid walking near the plants. Clay is needed if you wish to get the largest berries.

Samuel H. Warren said there are but few localities where the Marshall will grow well. There are many kinds nearly as good as the Marshall of which you can get ten quarts to one of the Marshall. The Ridgway, originated in Indiana, is one of the best for the home garden. It will give three times as many berries as the Marshall. It is not quite so large and the color is not so good, but it is a splendid strawberry and you can rely on it. The Sample is very handsome and very productive, but it lacks quality.

Mr. Frost said every plant should have a hundred square inches. He finds no variety that will yield as many berries as the Marshall. If they do not yield well it is because people do not know how to grow them. He knew of a man in Lincoln who had a bed of strawberries planted so close that the sunlight and air could not get in. The bed was so handsome that he called his neighbors to see it, but he did not raise a berry.

Mr. Low thought there is no fruit of which you want to know

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so much as the strawberry. If you have a clay soil the Marshall is the ideal berry. Some varieties need a sandy soil. Thirty or forty years ago the Hovey's Seedling was the ideal berry. You must know what kind of land you have got and plant varieties that will grow on that land.

Mr. Gregory said that Russet apples are most successful on land with a large proportion of clay.

The lecturer would use no manure on grapes. Bone is better, but it acts slowly. The wood should ripen early. In the ideal vine the joints are short. If your ground is rich, mulch it with hay rather than manure. The secret of growing grapes is to get good wood. He uses bone and ashes and some sulphate of potash.

Mr. Harrison had spread lime and wood ashes over leaves on the ground.

The lecturer said that to grow the best quality of apples he should not work his orchard at all. It is practically impossible to get very large fruit from land that is not worked, but the quality is better. Apples are not as firm or as high colored in cultivated ground as in pasturing. He advised a man in Newbury who had had no apples from his orchard for three years with clean culture to lay it down to grass, seeding thinly. There is no way to keep grass out of the orchard so well as by cows. It is well to work a young orchard until the trees get to bear a barrel or two. He would not have a limb so low that a cow could reach it. The fruit is not so good from a tree branching low. Train up high and let the limbs hang down. As trees begin to bear the ends of the limbs die off. He would make a new tree by pruning. If a tree is growing fast a large wound will grow over quickly. You want new, bright wood. Apply no fertilizer under the trees. The place to apply it is in the centre of the rows. The speaker was convinced that trees should be scraped and then painted over with Bordeaux mixture. There are many insects under the scales but he would not cut into the live bark.

Mr. Gregory said he had an orchard which bore little fruit. He scraped the trees and they bore better the next year. Baldwins from uncultivated ground keep better than those from tilled land.

A vote of thanks was unanimously passed for the lecture.

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MEETING FOR LECTURE AND DISCUSSION.

SATURDAY, February 16, 1901.

A meeting for Lecture and Discussion was holden today at eleven o'clock, the President, O. B. HADWEN, in the chair.

The following lecture was delivered:

THE ADVANCEMENT OF MARKET GARDENING IN THE PAST TWENTY-FIVE YEARS.

By MICHAEL SULLIVAN, Revere.

The question is often asked, what is market gardening? We find the kitchen garden, originally devoted to the cultivation of culinary vegetables for private use, enlarged so as to admit a commercial side, and a continuous enlargement caused by demand of local and surrounding communities.

The kitchen farmer or gardener has moved up a degree to the commercial or market gardener.

Horticulture, the twin brother of market gardening, on account of its close relations and the use of the greenhouse and hotbed in forcing crops, and the propagation of plants by each, can well be classed with market gardening as one and the same business. There is a difference between this and agriculture, owing to the small area of land required in the operations of one and the large area required by the other. The manner of cultivation, and large variety of crops produced well make a distinction.

The business of market gardening in the neighborhood of all cities increases always on a scale proportionate to the greatness and wealth of the city, and its progress and development will depend much upon the demand for the crops which can be produced profitably in the vicinity of those cities. Boston and surrounding cities have long been noted as having the most exacting markets in the United States as to the quality and neatness displayed in the preparation of all fruits and vegetables offered for sale.

The result of this continuous demand for the best, and the good prices generally to be obtained, have been the cause of son succeeding father in the line of producer, generation after generation;

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and this going on since the early settling of the country, has resulted in as high an order of intelligence as can be found anywhere in the world where market gardening or horticulture is carried on. They have been the founders of this grand Massachusetts Horticultural Society, whose good work is spreading throughout this great country, their great Boston market speaking at all times for the quality of their good work.

The changes and progress constantly going on in all lines of human effort are to the ordinary mind at times almost incomprehensible; that in the space of one life of average duration, one can see those great changes and improvements may well be called a Divine favor.

Along with all other lines of human work, that of the agriculturist has kept pace, and has advanced wherever science and scientific knowledge have availed. The agriculture of fifty years ago, whether on the farm or in the market garden of those days, seems as remote and ancient in comparison with modern methods as would the workshop of the manufacturer or the machine shop of the most skilled mechanic of those times. Still old Mother Earth, the foundation of all wealth, remains the same.

The tillage of the soil and preparation for the seeds are not the only improvements; the hand of science has come to the aid of the agriculturist, and whether applied on the farm or the market garden, this aid has been of material advantage.

Who but the practical engineer and scientist could explain the advantages of underdraining the soil, transforming thereby what was before a waste into a productive and fertile field; who but he, could so well explain that by underdraining, the wet and soggy soil could be made warm and productive, so that the full benefit of the manure which might be applied could be made available. And so on, step by step, the scientist directs the practical hand of the farmer and market gardener, changing the old time farmer himself into the practical and scientific market gardener of today. Every day on every hand we are told that we are living in an age of progress.

In looking backward a quarter of a century, with all its changes, time seems short in comparison with the twenty-five years yet to come, and now, in the very beginning of the first quarter of the twentieth century, there can be no doubt but the advanced intelli-

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gence and the high education of both men and women, must largely exceed that of the past quarter century.

The advancement and development of market gardening in the past twenty-five years is a subject well worthy of a pen more able than mine. However, thirty years and more of continuous labor in any line should leave one master of his business.

The market garden, more than any line of agriculture, should be worked on strictly scientific principles; that is, exact knowledge of the requirements of all the crops under cultivation, whether in the open field or under glass.

A close study should be made first of location and approaches thereto; then soil —its composition, both of surface and subsoil, and perhaps climatic changes caused by location, for it may be near the ocean, and therefore have less snow to contend with — or inland, with its late and early frosts, and heavy and destructive showers in the growing season. Along all these lines science now comes to the aid of the intelligent market gardener.

Books on market gardening written and published at the beginning of the past quarter of a century, classed at that time as "standard works on American gardening," plainly show its advancement and development, when compared with the standard works written and published today. While there were to be had excellent standard works on agriculture and plain farming, very little of value could be found on the subject of market gardening.

"The Field and Garden Vegetables of America," by Fearing Burr, Jr., was published in 1865. "Market Gardening for Profit," by Peter Henderson, 1866, was the first and most valuable practical work published, which was then available to the American market gardener. This book, more than any other published in this country, opened up the entire field of commercial gardening. What were considered "trade secrets" before its publication, were made available to all, and the enlargement and spreading out of the market gardening business all over the country can well be dated from this publication. Here, in a condensed form, is printed information as to those who are best fitted for the business, the monthly calendar giving directions to guide the practical gardener throughout the year.

The time has long since gone by when the average farmer or

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market gardener took the view once credited to him, that information obtained from books was of no value. The agriculturist and market gardener require the best books for their study as well as the architect or mechanical engineer, for in either case the books are an essential part of the tools to work with. Today books are to be had on almost every conceivable subject in agriculture and the growing of special crops. What was once guarded as a trade secret is now found written in books, magazines, and the agricultural newspapers. Therefore I shall leave out all detail in this paper as to the growing of crops or the preparation of the soil, only referring in a general way to the great changes so rapidly taking place.

Again referring to the most advanced work published in 1866, how ancient and primitive seem the greenhouse and forcing pit of that time compared with those of today. But it can well be said, the instructions were all there, and the foundation for the large operations now going on in all parts of the country, was then outlined in this little book.

The valuable publications of the Hatch Experiment station, at Amherst, and the equally valuable publications of this Horticultural Society, together with many others that might be mentioned, present to the gardener of today unlimited sources of information.

Certain locations in our State are noted as leading in special lines of work and invention. Lynn for its shoe manufactures; Lowell for its cotton mills; and so Arlington and Belmont can well be called the leading centre of new and progressive ideas in market gardening. In order to verify this, look at the magnitude of their greenhouses and well tilled gardens. By the use of those immense glass structures, some of them six hundred feet long by fifty feet wide, the field operations are continued, enclosing smaller fields for the winter growth of vegetables.

To such assured success has this attained, that one of the largest growers has said that he was as yet undecided as to which was the cheapest, whether he could not grow the highest quality of vegetables as cheaply under glass as in the open field. This, when understood, may yet come to pass, for at this date a process for cleansing the soil, called sterilizing, is known which will make it possible.

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Here again has science come to the aid of the horticulturist and market gardener. The Experiment Stations are entitled to due credit for this already assured success, made so by the larger appliances and conveniences of the scientific market gardener, who has already applied this method in the successful growing of immense quantities of lettuce.

Upon further experience it may be found that by sterilization of the soil, perhaps the entire list of fungus diseases can be easily controlled or wiped out; also the expensive fumigation of greenhouses may be rendered unnecessary.

Two years' experience has as yet but partially demonstrated its full value to the market gardener; already a patent machine for soil sterilization is on the market, which indicates that it is somewhat beyond the experimental stage. Those who are carefully studying results, are already able to say that they think this discovery one of the best and most valuable of recent date.

A process of sun sterilization may yet cheapen and simplify this valuable discovery. From the management and care of the old time hotbeds of twenty-five or thirty years ago, consisting of only a few three by six foot hotbed sashes in many of the best market gardens, has sprung the care and management of the immense greenhouses now so successfully worked, just as from the old time cobbler's shops at Lynn, have come the great shoe manufactories, and the care and management of all their fine and complicated machinery.

It is nothing strange now to find the products of Massachusetts greenhouses on the banquet tables of Chicago and all the other leading cities of the United States.

Cucumbers, once considered so difficult to grow in winter, and as yet so expensive, are now produced at all seasons, and the markets are kept well supplied throughout the winter. In growing this crop, staminating the blossom, which is done by the bees in spring and summer and considered absolutely necessary for success, can now be done by artificial means. Twenty-five years ago only a limited knowledge was had as to its requirements. This applies to nearly all the garden fruits and vegetables, and is fairly understood at the present time.

The Boston Market Gardeners' Association, of which I am

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pleased to be a member, was organized in 1886, and was the first in that line in the United States. W. W. Rawson, who was elected its first President, is still holding that position, and has shown himself one of the most able, advanced, and progressive market gardeners engaged in the business. The benefit resulting from this organization, now of fourteen years standing, is of much importance. Valuable lectures are given by the best professional ability from the various agricultural colleges; also papers are read by the different members, treating on special crops in the cultivation of which they might well be classed as experts, the presentation and reading of which before one of the most experienced and enlightened bodies of men engaged both in agriculture and horticulture in the United States, creates discussions of value to members and all those present. Its members are largely members of this Horticultural Society, and are working mutually for the benefit of both.

Other States are now copying them, and similar associations will result throughout the country in or near the large business centres.

While the business of market gardening is not what it once was, neither is any other business; still it may be said that there are but few lines of business contending now with the competition from outside and which did not exist twenty-five years ago. California, the great West, and the sunny South, are now getting the cream of prices by their early, and with us, unseasonable, productions, now that transportation is so cheap over the great lines both by land and water, daily and weekly connecting distant sections of this great country, constantly supplying their best fruits and vegetables to our market. All this tends to discourage many, and only the courageous capitalist, who can afford to purchase modern appliances, is now making any profit.

Market gardening has laid the foundation of many a fortune in years past, and a good living and a comfortable country home still await those who will fulfill its hard and exacting requirements, and who wish to till the soil.

There can be no question that there has been great improvement in the modern appliances for irrigation of the field crops and the greenhouse, requiring the expenditure and outlay of large

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sums of money; also in the use of insecticides and poisons for the spraying of fruits of the orchards and field and garden crops, producing results in quality as well as in quantity which without them could not be obtained.

The proper use and value of the commercial fertilizer for farm and market garden crops is now well and carefully studied, and the guesswork of twenty-five years ago as to their application is no longer needed by the intelligent farmer or market gardener, and he is able to place a more just value on stable manure, that always reliable and best of all fertilizers.

But all these advancements have brought their burdens also, in the shape of increased taxes. The near-by market gardeners are now suffering from burdensome and often unjust taxation. Situated within the rapidly growing towns, and near large cities, they are compelled to carry their proportionate part of the expensive improvements in the central portions of those towns, often receiving but little or no direct benefit therefrom.

The solution of this problem can only be found in the gradual absorption and cutting up into house lots, of those farms, thereby compelling those continuing in this line of business, to move back where lands are to be had cheaper, and where therefore taxation is lower. It is the opinion now of many, that this condition should be adjusted, even by legislation if necessary, so as to give encouragement to those who are continuously doing so much for the advancement of agriculture.

That New England has led and will still continue to lead in all the new lines in agricultural development, in improved methods in market gardening and horticulture, is now plainly evident. This year, 1901, the first of the new century, Boston, ever progressive, still in the lead, will open to the public her new and grand Horticultural Hall, the finest in this country if not in the world, where the coming generations can continue the famous exhibitions which have been given here in this old hall, with all its pleasant associations in the past, and which have given pleasure as well as instruction to thousands; where the work of exhibiting the productions of the market gardener as well as the choice and equally skillful work of the horticulturist, having ample room each and all for the exhibition of every kind, can still go on—Boston, the home

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of education, with always new and advancing ideas, her best men continuously studying out, always for the greatest public good, not alone in her grand buildings for State Capitol and Municipal uses, but also for Music and the Drama, as well as Horticulture.

Quincy Market, the grand conception of the elder Mayor Quincy, built under his direction and providing standing room for the farmers' produce wagons on South Market Street, was once the best market in any city in the United States. But the Quincy and Faneuil Hall Markets, once ample, are now fast becoming insufficient, owing to the very rapid increase of population and business, requiring for both buildings and surroundings a much larger area than is now within the market limits.

Boston ought to do something for those worthy tillers of the soil, who do so much in constantly supplying fresh and healthy produce for its inhabitants. Quincy Market should be extended to Atlantic Avenue, and a covered shelter stand should be provided for the market gardener and farmer; such an enlargement would do credit to the City of Boston, which should retain full control and ownership of the whole. The contemplated cutting of a street through Quincy Market, thus lessening the farmer's limited privileges on South Market Street, should not be allowed.

Why should Boston overlook and neglect her Market, always in the past considered of so much importance? That the advancement of market gardening may be encouraged within this grand old Commonwealth of Massachusetts, is the hope and desire of those engaged in this most worthy occupation, that they may do their State credit in the future as they have done in the past.

In our day the people of wealth who daily go in their carriages to Quincy Market to order their table supplies of fruits and vegetables, the man of moderate means, and the poor man who takes his basket to the market, can all buy, according to their means, the luxuries of the season as well as the necessaries of life, there so temptingly displayed; and all this is the handiwork of the market gardener and modern farmer. Full credit should be awarded to them for the bountiful table which the poor man can so cheaply furnish at the present day.

The taste for many kinds of vegetables, when first introduced

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into our markets, is largely an acquired taste, so that their growing is unprofitable to the market gardener, and therefore the production for many years, remains limited until the daily demand increases and a good market is secured.

The Tomato, for instance, required years before it found its place as a popular vegetable for general use, while today tons of this excellent and healthful vegetable are sold in every market throughout the country.

The abundant production and large market supply in its season of the appetizing Celery, once so limited in supply in our market that only the wealthy could afford to purchase, bring it within the reach of all, and this excellent table vegetable can now be purchased cheaply everywhere and may be well called a boon to the city dwellers and to humanity.

The abundant supply of Asparagus also, in its season, supplemented by early supplies from the South, can be appreciated and is by those who know its value as a food as well as for its medicinal properties.

The early spring market once so profitable to the skilled Boston market gardener, now no longer exists, except for those gardeners who, with their greenhouse and hotbed products, can compete with the South. The Southern and California fruits and vegetables are now supplied to our markets in overflowing quantities, and hereafter the competition from all outside sources will tend still further to diminish the encouragement for local production. However, the climate and favored locations of soil and situation, nearness to market, etc., will always remain factors to encourage those wishing to continue in market gardening and fruit growing here in Massachusetts.

Discussion.

Hon. J. J. H. Gregory thought the meeting much indebted to the lecturer for the broad and sensible handling which he had given his subject. About sixty years ago he and his brother sold in his native town, Marblehead, the first tomatoes. They brought, green, three cents a pound. There was then only one kind. At that time the only beet besides the Long Blood was the Turnip Blood; the Bassano was introduced soon afterwards.

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There were Tory Beans, Bush Beans, China, then sometimes called the Skunk Beans, and the Sieva or Small Lima. Sweet Corn was hardly known; it was then called French Corn; the first variety introduced was the Darling. It came into use rather slowly. The only carrot was the Long Orange, and the only cucumber the Frame. The only cabbages were the old English Drumhead and the Long Stemmed Savoy. Of potatoes there were the Early Hill and the Long Red. Onions were then for the most part sold in traces; the Strasburg was the yellow variety, and all our other varieties of yellow, of which the Danvers was one, were bred from it. There were only hard yellow peas; the wrinkled sorts were not known. Fairbeard's Champion of England was one of the first and still remains one of our best. The only dandelions seen in the markets were wild ones, dug in the fields. The only melons were soft, yellow, oval "mushmelons." The Crookneck was then about the only squash; the Marrow was introduced by John M. Ives at about the time Mr. Gregory was speaking of. The true original variety is now lost, but if we could find out where they came from we might renew them; probably they were from Brazil. The true Hubbard has no soft shell; they begin ripening near the stem and the shell hardens.

Varnum Frost said that much stress had been laid on modern science, but we get no good squashes now. The barrel boxes which are filled with two or three dozen heads of lettuce are one-half salt hay. He used to pack cauliflowers solid; now eight cauliflowers carry three times their weight in lumber and rubbish, and loads are piled ten feet high that might be carried in a light wagon. Is the quality of vegetables as good as it was fifty years ago? It is nonsense to say that farming cannot be learned by observation.

The lecturer said that market gardeners in Arlington and Belmont had been stuffing their soil so full of manure that the quality of the vegetables raised on it had deteriorated. The quality cannot be expected to be what it was on virgin soil thirty years ago or more. He thought it might be well for a market gardener to lay down one-half of his ground to grass alternately to rejuvenate it.

Joshua C. Stone said that in what had been said by the speakers who preceded him there was not one word of encouragement to

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young men to go to farming. A man makes a profit of five thousand dollars a year of receipts over expenses, but he has a hundred thousand dollars invested in his plant, and makes no account of interest. The speaker had been in the business forty years and has four sons, not one of whom would take the farm if he would give it to him. He can grow cucumbers every week in the year, but no man can grow them at a profit to be fit for use before this time. Greenhouses are no profit to any man in connection with a market farm, but a man who gives his whole attention to them might do something. No man can get a living on land worth two thousand dollars an acre.

Warren W. Rawson thought that the lecturer had covered the ground well without going into details. The speaker could go back forty years and could remember when two hundred hotbed sashes was a large number for one market gardener to have. Today two thousand is not a large number for one grower, and this besides several acres of greenhouses. Six dozen heads of lettuce would then go in a barrel box; now two or three dozen will fill it. The speaker is not discouraged at low prices, for the market has greatly extended, and the productions of Boston market gardeners go as far as Chicago and Canada. He had never known a year when cucumbers did not bring twenty dollars per hundred in February, and he has sold them for fifty dollars per hundred. Lettuce has brought two dollars and a half per dozen. The telegraphic advice today was to ship light, for there were large quantities from the south. The speaker thought we can grow vegetables here as cheaply as at the south. Nothing is so important as sterilization of the soil; a machine has been invented for the purpose, and the speaker thought it would rid the soil of insects and save fumigation.

Mr. Rawson thought that sterilization would destroy many insects. Since he practised it he had seen very few green flies.

The lecturer said that in the paper which he had read he had touched on the inducement to the younger generation to engage in market gardening, for there is a living still remaining to the business. It will not produce millionaires, but it has laid the foundation of fortunes, though this was largely from the rise in the value of land; but this applies only to the vicinity of Boston

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and other cities. If he had his life to live over again he knew of no position in the community more independent than that of the market gardener.

Mr. Frost said that there is four times the amount invested in market gardening in Arlington that there was forty years ago, but it does not put so much money into the farmers' pockets. Any man can bring up a family and lay up two thousand dollars a year if his father leaves him a hundred thousand dollars.

The lecturer said that thirty-five or forty years ago, in war times, the market gardeners' wagons were met at the ferry by the market men with the cry, "Sell it to me, sell it to me!" and the gardener made his own prices. Then was the time when the farmer had a large bank account and paid off his mortgage. Prices were almost fabulous; tomatoes brought two dollars per bushel by the wagon load, and all other farm produce brought proportionate prices.

MEETING FOR LECTURE AND DISCUSSION.

SATURDAY, February 23, 1901.

A Meeting for Lecture and Discussion was holden today at eleven o'clock, the President, O. B. HADWEN, in the chair.

The following lecture was delivered:

A QUARTER CENTURY'S EVOLUTION IN AMERICAN HORTICULTURE.

By PATRICK O'MARA, New York, N. Y.

The phenomenal progress made in horticulture during the past few years may well supply a theme for the essayist, provide food for thought to those engaged in its development and prove an interesting study for those even remotely connected with it. While horticulture generally has made great strides forward, the most pronounced progress has been in floriculture, particularly in the growing of cut flowers to supply the great cities during the winter season. It is in this particular branch of floriculture that American horticulture can justly claim precedence over all others and

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although the scope of this paper is not limited to that alone, a review of it will form the principal part. So pronounced is the advance in greenhouse construction, in methods of growing, in business methods, in the varieties of roses, carnations, chrysanthemums, geraniums, cannas, and other flowering plants, that the progress made may well be termed evolution. Coincident with the advance made in growing, and equally pronounced, is the great change in the retail stores; in fact much of the change in the growing must be credited to the enterprise of the retailer. This is somewhat debatable ground but it is not vitally important; the great point is that progress has been of a necessity coincident.

My first actual contact with the great New York cut flower market took place in the winter of 1874–'75, when I was sent as an assistant to my elder brother to carry an extra basket, occasionally, in his wake, and sometimes go off on an independent route to sell. It seems incredible, in these days, that one man carrying flowers in a basket, with a boy to help on very busy days, and the use of a horse and wagon at Christmas and New Year's, would dispose of about $35,000.00 worth of flowers annually, but such is the fact. The horse and wagon at the times mentioned were necessary largely because of the increased bulk of Poinsettia, which was a "pièce de résistance" in those days, and which, by the way, is just coming back into fashion again. A large basket, such as was in general use to carry cut flowers then would hold an amazing lot of flowers and the prices were gilt edged, $20.00 to $25.00 per hundred for Le Pactole, Lamarque, Safrano, Isabella Sprunt and Bon Silène roses, and even $30.00 per hundred for Douglas. Small roses like these, cut with stems about a foot long in the extreme, did not take up much room; carnations picked short and a few perhaps on stems about six inches long; double white Primula picked short; *Stevia compacta*, Bouvardias, Abutilons, bunches of Heliotrope, *Chorizema varium*, *Lilium candidum*, *Euphorbia Jacquiniæflora*, Tuberoses, Lily of the Valley, Eupatorium, Allamanda, Begonias, Dutch bulb stock, *Jasminum grandiflorum*, Callas, Violets, Sweet Alyssum, Mignonette, *Clerodendron Balfouri*, *Eucharis Amazonica*, leaves of *Cissus discolor*, Smilax, leaves of Pelargonium Madame Pollock, Rose Geranium leaves, fern fronds — anything and everything in the

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shape of flowers and foliage could be sold in the early part of the last quarter century. It required considerable diplomacy and tact on the part of the seller during the busy season to steer clear of the too prying buyer in the stores. The various flowers would be done up in separate packages, some reserved for particular customers. The camellia was still in the market when I first began, but was rapidly passing away and shortly after disappeared absolutely. It is interesting to note that camellias were very much in evidence among the flowers used at the funeral of the late Queen of England and that there is every evidence of a revival in them. Thus do fashions change, and the favorite of today may be the despised outcast of tomorrow. The double white Primula was a staple at the time of which I speak and was largely used in funeral designs. We grew a house of it one hundred feet long and found it very profitable. Tuberoses were a staple, too, and one of the best paying crops. We would realize a thousand dollars and over from a house one hundred feet long and ten feet wide, besides raising a spring crop of bedding plants on the same space. In these days of fifty cents per square foot per annum, the wonder is that more florists did not get rich in those halcyon days. One of the local florists on Jersey City Heights made a specialty of tuberoses and amassed a competence from it while the "boom" lasted. These were still the days of the stiff table design, flat basket, hand bouquets made with flowers wired on broom corn, little boutonnières made up with a green leaf for a background and anything handy. Orchids, with the exception of *Cypripedium insigne*, *Dendrobium nobile*, *Bletia Tankervilleæ* (or *Phaius grandifolius*), *Peristeria elata* and Zygopetalum were practically unknown, and only a few of these found their way to market, mainly from private collections. The glorious Cattleya had not yet made its appearance. There is a well authenticated story of its first appearance in a Broadway, New York, flower store. A noted beau who called in every morning for his boutonnière was always looking for something new. The proprietor had obtained a Cattleya flower and had it safely stored in the ice box awaiting his appearance. He came. Reverently the flower was placed in his buttonhole; silently he was turned toward the mirror. There was an air of mystery, the play of an artist, about the whole performance and

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then, the climax, $25.00 for the flower, which was paid with alacrity. It is further stated that for many days thereafter the same gentleman called regularly as usual for his orchid, but the price had dropped to $15.00. No wonder that some of our millionaires decided to go into the business of raising them. It is difficult to get statistics on cut flowers which are reliable, but from the best information obtainable I feel safe in saying that the value of orchid flowers sold annually in the New York market for several years past will not fall short of $100,000.00. This is only one of the many features in the evolution of floriculture.

It was about 1875 that the first decided ground swell in the coming evolution in floriculture was felt, and although it did not manifest itself forcibly for several years thereafter yet it is comparatively easy to trace at this time. All eyes were being turned toward the rose. The varieties then being grown were far from satisfactory; larger flowers and a better grade were demanded, and the supply was forthcoming. Better greenhouse structures were needed and these too were soon supplied. Madison, N. J., began to assert itself. The growers there began sending in Cornelia Cook, and a great revelation it was! Gen. Jacqueminot was artificially rested and forced into flower, the buds bringing from $1.00 to $2.00 each. William Francis Bennett and Pierre Guillot were tried in an effort to provide the desired red rose in winter and failed. Duchess of Edinburgh received a limited trial, but was found wanting. Souvenir de Wootton made its appearance and held its own until the growers got to understand the needs of Meteor, which has since held the field until challenged by Liberty, to which it has not yet relinquished it. Souvenir d'un Ami held place for a time, under an alias at first, but was unable to hold its place against the grand Catherine Mermet, and the day came when her fair daughter, Bridesmaid, drove the parent from the market. The Bride, another daughter of Mermet, quickly drove Cornelia Cook and Niphetos into obscurity. Perle des Jardins eclipsed Maréchal Neil, and Sunset, daughter of Perle, had her day only to retire into obscurity even before the parent. About 1885 the great forcing rose of that and the present day was ushered in as American Beauty, a seedling it was alleged discovered in the gardens of Hon. George Bancroft at Washington, D. C. A

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very pretty story, and true as far as the introducer knew at the time, but since identified as Mme. Ferdinand Jamain, introduced by Lédéchaux ten years before. This grand rose has surpassed the most sanguine predictions of the prophets, and up to the present time is without a rival. One daughter, — American Belle — has passed to the "great beyond," but another and fairer daughter has made her debut, viz.: Queen of Edgely; whether she can move in the same orbit has yet to be determined. Mme. Hoste, Mme. Cusin, Mrs. J. Pierpont Morgan, Mrs. W. C. Whitney, Belle Siebrecht, Mme. Caroline Testout, La France, Souvenir du President Carnot, each have had their day; some of them are having it still, but a comparatively small day it is. Kaiserin Augusta Victoria is one of the varieties which has come to stay. Papa Gontier, from which Mr. John Henderson reaped a goodly harvest, has gone too. Golden Gate, for a long time in undeserved obscurity, has emerged into the effulgence of what seems a passing day. Mme. de Watteville, Mme. Pierre Guillot, Mme. Capucine, Duchess of Albany, Puritan, and Waban, from which much was expected, file past in our memories; some are fair ghosts of vanished expectations. I beg to digress for a moment to observe that I have not attempted any exact chronology in the appearance of these varieties, deeming it needless. It appears worthy of note here that as a rule the varieties most loudly heralded when they first made their appearance have not held the field with those which modestly entered the arena. The reaction from over-praise, or the result of over-propagation may be the cause. The demand for larger roses already mentioned resulted in the forcing of Hybrid Remontants besides the Gen. Jacqueminot, and for a while we had quantities of Ulrich Brunner, Mrs. John Laing, Baroness Rothschild, Rodocanachi and others. One New York grower for several years sent in Heinrich Schultheis under an alias with profit to himself. Anna de Diesbach held sway for a time as Gloire de Paris. The old adage that "there are tricks in every trade but ours" holds good even with horticulturists. It is somewhat remarkable that, of all the varieties of roses tried for forcing, the great trio remaining are distinctly American, — The Bride, Bridesmaid, and American Beauty. We should not be asked to relinquish all claim to the latter; at all events it was discovered

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here. As Columbus could not create a continent he did the next best thing,—discovered one. At this date it would seem useless to set up the claim that it might have been a seedling after all; certain it is that nowhere under the sun are such American Beauty roses produced as in this country. The Dinsmore rose was a seedling beyond all question, raised by Wainwright of Trenton, N. J., yet it is practically identical with Madame Charles Wood. The Trask Grape is identical with Brighton, yet both were seedlings raised hundreds of miles apart; the former was raised first and never got upon the market, while the latter was introduced and brought some deserved fame to its raiser.

Next in importance to the rose as a cut flower comes the carnation. The development in this has been even more marvellous than in the rose. Statistics in cut flowers, as before observed, are very unreliable. Mr. John Thorpe, at the first meeting of the Society of American Florists in 1885, stated that the number of roses then produced for cut flowers in the United States was 24,000,000 and of carnations 120,000,000, to which should be added 6,000,000 roses and 30,000,000 carnations grown in private greenhouses; these, of course, were actually competing with the commercial output. Miss Emily Louise Taplin made a similar statement in 1886, probably borrowed from Mr. Thorpe. Professor Galloway in the "Year Book of the Department of Agriculture" for 1899 estimated the number of flowers sold as follows; roses, 100,000,000, carnations, 100,000,000, to which add 25 per cent for the quantity grown in private places. Here is a wide discrepancy and it is introduced here merely to show that it is such. Probably a figure midway between the two would be nearer the truth. Miss Taplin, in the statement above referred to, estimated that the total glass area in the United States was 3,200,000 square feet, an estimate out of all proportion to the alleged product. Professor Galloway in 1899 estimates the amount at 24,500,000 square feet, averaging 2,500 square feet to each florist. I think this average could be reasonably increased to 3,000 square feet, to include cold frames and hotbeds, which would bring the total up to 30,000,000 square feet in commercial use for the production of flowers and flowering plants, some portion no doubt being used for vegetables. Add to this the vast

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amount of glass used by market gardeners and private gardeners, at least 50 per cent of the foregoing area, and we have a fairly accurate idea of the importance of horticulture at the present day in the United States.

But to return to the carnation. The growing demand for the flowers, the evident need for a better grade, and the apparent necessity of "booming" the flower were causes that led to the formation of the American Carnation Society in 1891. This organization has been wonderfully successful along its chosen lines, and the aims originally outlined are being realized each year. The much quoted "Thorpe's Ideal" carnation, viz.: one four inches in diameter on a two foot stem, is not so far away. The development of the carnation in this country is distinctively American. The varieties in use have been raised here, the methods of culture have been perfected here. From Hinsdale to Prosperity; from Portia to America, G. H. Crane, and Adonis; from President De Graw to Lizzie McGowan, Flora Hill, Alaska, White Cloud and Norway; from La Purité to Tidal Wave, William Scott, and Mrs. Thomas W. Lawson; from Miss Joliffe to Daybreak; from Charmer to Mrs. George M. Bradt and Olympia; from Astoria to Buttercup and Gold Nugget; from Rosy Morn to The Marquis and Genevieve Lord; from Crimson King to Gen. Maceo, Gen. Gomez, Egypt and Gov. Roosevelt — these indicate the giant strides made but tell little of the patient, intelligent efforts of the hybridizers. It is a record of which American horticulturists may well feel proud.

The violet, that other important member of the cut flower family, has grown in importance with the others. Its history does not contain as much of interest as does that of the rose or carnation. New double varieties (alleged) have been introduced but they are after all only strains of Marie Louise. New single varieties have been introduced, much superior to the old Schoenbrunn, but the great demand is for the double ones.

The chrysanthemum, which forms a by-crop in the cut flower market, exhibits one of the most wonderful efforts in American horticulture to develop and popularize a particular flower. To Mr. John Thorpe is due much of the credit for this. The exhibitions in New York, beginning in 1886, those in Philadelphia

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and Boston, the importation from Japan of the collection containing Mrs. C. H. Wheeler and other good sorts, the importation in 1888 containing Mrs. Alpheus Hardy and other valuable varieties, (an importation, by the way, which has a romantic story attached to it of gratitude from a Japanese youth to the lady whose name the variety mentioned bears), importations from England and the continent, the rapid production of seedlings of pronounced merit here,— all combined to set afloat on the sea of popular favor the glorious "Queen of Autumn." It is highly creditable to our cultivators that well among the best varieties in the world today are found varieties raised here. The stamp of fashion was set upon the Chrysanthemum and although the fickle jade has somewhat changed in her attitude of late, particularly in the East, yet the impetus given carries it along and will undoubtedly do so for years to come. In hundreds of the smaller cities throughout the country, as well as in the large ones, the annual chrysanthemum show is a settled institution and this year there is to be one in New York on a magnificent scale.

Now let us glance at the evolution in the plant trade. It is divided, let us say, into five sections. The catalogue trade, the rooted carnation cutting trade, which is a branch really of the cut flower trade, the market florist near the large cities, who grows soft-wooded flowering and ornamental foliaged bedding plants for market and cemeteries, the grower of decorative plants, such as palms, for the city retail florist, and the florist in the smaller cities and towns who supplies a local trade almost exclusively. The first mentioned is perhaps the most important and most interesting. It is this branch of the trade which mirrors, and in a sense molds, public sentiment. Ever on the outlook for new plants and improvements in varieties, ever on the *qui vive* to gauge the popular taste correctly, the men engaged in it have to decide what to take up and what to drop; and as the majority decide, so it will be in nine cases out of ten. The catalogue man reaches where no florist or seedsman has yet ventured. The seed box at the the country store cannot; it is inadequate to satisfy the aesthetic sense of those who hunger after the finer grades of flowers and this want the catalogue and its publisher fill. The catalogue is the great vehicle for the distribution of horticultural literature, much

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of it being sent gratuitously or as a premium on orders. The advertisements in the great magazines, in the weekly press and in the rural publications supply the inspiration for many to begin gardening who otherwise would never attempt it. The traveler for the catalogue man, particularly in nursery stock, the "home agent," the "club organizer," the local expert who has carried off a prize for the best this or that offered by the catalogue man, these are potent agents in the evolution of American horticulture. They are part of the great machine and although they are railed at by very conservative people, they are essential. It is in the wake of these that the local florist and nurseryman, as well as the seedsman, spring into activity; it is the catalogue which sets the pace for them, and were it suddenly to be withdrawn from circulation, many of those who abuse it would either have to take up the burden or cease business. The development of the catalogue has been wonderful in the extreme. Twenty-five years ago the most ambitious in the country was a book of about one hundred pages, six by nine inches, in a plain cover and sparsely illustrated. That was a tremendous advance over what was published ten years before. Today the leading catalogue has one hundred and ninety-four pages, is a book eight and a half by ten and a half inches, has an illuminated cover, six colored plates, colored photographic scenes, every page is profusely illustrated, and ten copies are distributed for one sent out twenty-five years ago. Although I am unable to say positively how many firms issued catalogues twenty-five years ago yet I think one hundred would cover them. Today there are about three hundred and fifty in the field. In addition to these we must consider the great number of foreign catalogues sent here; the American trade is no mean item to European houses. Owing to the great variety of stock carried by seedsmen, florists, and nurserymen, advertising must take the forms of securing distribution for the catalogue; they are all glad to send it to a bona fide buyer but must discriminate against the catalogue collector. Some still mail it free to applicants. Very ingenious are the plans adopted to secure distribution. The first I believe to advertise a specialty as a vehicle to distribute the catalogue was Peter Henderson with the celebrated Moonflower in 1887. To show the value of special adver-

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tising well done there is no better illustration than this. He first offered the plant in his catalogue as *Calonyction grandiflorum* or "Evening Glory" in 1879, the text dilating on its "moonlike" flowers. In 1884 the name Moon Flower was used in the catalogue for the first time; the price was twenty cents each, then and up to 1887. When it was advertised in the magazines the price was fixed at forty cents each, and the demand was phenomenal, about sixty thousand plants being sold as against two thousand the previous year. This experiment showed so forcibly the value of a popular and descriptive name and the use of a specialty that the plan was followed by many thereafter with varying success. The use of the appellation "Ostrich Plume Chrysanthemum" for Mrs. Alpheus Hardy, and of "The Memorial Rose" for *Rosa Wichuraiana* were equally productive of results. In fact the effect of the latter was more far-reaching as it directed attention to the rose in such a manner that the raising of hybrids was stimulated in a great degree. The name of "Wineberry" for *Rubus phoenicolasius* was a palpable hit. But many overshot the mark, and some of the alleged popular names were not descriptive and were meaningless in their application. The Bush Lima Bean was another item which made a splendid specialty to advertise. The offering of a money prize for a suitable name was the natural outgrowth of the first principle, and for a time was a potent agent in attracting customers. All these are interesting as manifestations of the evolution in American horticulture. The catalogue trade in plants, influenced no doubt by the cut flower market, is given up largely now to roses, chrysanthemums, carnations, etc. Twenty-five years ago, there was a larger collection of plants offered than today. This is somewhat to be regretted. The greenhouses on large private places are mainly devoted to growing cut flowers instead of collections of stove and greenhouse plants. For this reason they are not so interesting to visitors, nor even to the owners, and a return to the former vogue would be an improvement.

The period which we are contemplating saw the rise, the climax, and the partial fall of the ornate bed, involved design, and carpet system of outdoor bedding. That it was carried to excess is undeniable. It is questionable taste to show prize fighters and

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elephants in ornamental beds of plants. Butterflies could be tolerated; flags are not so bad; but ships that do not sail and railroad trains that never go, can only be regarded as monstrosities in lawn decorations. This school of gardening was vigorously attacked in the house of its friends by William McMillan at the Convention of the Society of American Florists in 1889. The temple of the cult was in Chicago and it is significant that at the World's Fair, in 1893, it was conspicuous by its absence. The pendulum swung too far the other way there, the reaction came; we are promised some ornamental bedding at the Pan-American in Buffalo this year. It will be welcome and will be a sort of poetic justice. My feeble voice was raised against the wholesale denunciation of ornamental bedding at the time and will continue to be raised. To do away with it would be a retrograde movement. The so-called "natural" system is not satisfying by itself, there is room for both in proper degree, for one is the complement of the other.

The grower for the retail stores is really a development of the quarter century. It is wonderful the quantity of palms, ferns, heaths, lilies, azaleas, hydrangeas, cyclamens, primulas, oranges, pandanuses, crotons, dracænas, poinsettias, and other flowering and decorative plants which are grown and sold now compared even with ten years ago. It is the finest development in horticulture. The market florist goes along in the even tenor of his way much as he did twenty-five years ago, only there is more of him. The same may be said of the country florist who grows for a home trade.

Now let us briefly inquire into the causes for the evolution we have been studying and view some of the effects produced thereby. First was the realization that the general florist could not produce first-class flowers; hence the specialist with all the improvements in structures and system. It is needless to go into the history of steam heating, large glass, improved ventilating apparatus, etc. This brought about better business methods; young men brought up in the country, accustomed to its ceaseless business activity, untrammelled by old-fashioned routine, got into the business; the older men were carried along by their example and helped them with their experience. The Society of American

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Florists, founded in 1885, brought about a concentration of effort otherwise impracticable, if not impossible. A trade press was established through which intelligence was disseminated. The annual meetings brought men together and ideas were exchanged, rivalry was fostered, ambition received a spur. The florists stood before the country as a body of business men, they entered the legislative halls, they negotiated with transportation companies; in fact, they were metamorphosed as compared with the slow-going, plodding, happy-go-lucky men of a few years before. The great horticultural societies, those of Massachusetts and Pennsylvania, awoke to the growing importance of flowers and florists and increased the schedules of prizes at their exhibitions. The Department of Agriculture and the State Experiment Stations awoke too and listened to the calls from the florists; science was invoked and instead of the rule of thumb the laws of cause and effect came into play. The retail florist in the city became an artist; he rivalled the drygoods man in window display, he surpassed most of them in shop appointments. He transcended him and every one else in rolling stock. He dropped his first name on his signs and cards and became "The Florist" with a note of exultation in the title. The commission dealer created himself and has grown apace, a shrewd, energetic hail-fellow-well-met for the most part. The grower wrestling with the problem as old as business — From producer to consumer,— has formed his exchange, has become commission man himself and it is all part of the evolution.

Florists' clubs are in all the large cities; emulating their example, gardeners' associations have sprung up, organization is in the air and 'tis well 'tis so when rightfully conducted. We have the Rose Society, and the Dahlia Society, the Florists' Hail Association, the Florists' Protective Association. New plants are officially registered; printed labels are in general use in the shipping trade; we have wire stakes instead of split shingle; the hotels and private residences are bowers of exotic plants; one may order in New York to have flowers delivered in Paris, London, or Berlin; the florist has hitched on to natural gas for fuel; the great millionaires — some of them — have bestowed conservatories and parks on city and village; they have built great

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ranges of glass for their own use; the florist is no stranger to cold storage and summer and winter look alike to him. These are a few of the mile stones in a quarter century's progress. In that period we have seen introduced the Bermuda Lily, the Crozy Cannas and their seedlings; we have seen roses propagated during summer and distributed by millions and tens of millions by mail and express; we have seen the home grower successfully compete in budded roses with the foreigner; cheap and good land with energy plus have beaten cheap labor; we have had *Asparagus plumosus* and *A. Sprengerii*; we have had the great Crimson Rambler Rose; we have seen the Bay Trees dot our streets; we have seen great botanic gardens, like the Bronx, brought into being; we have seen the wonderful development of the Arnold Arboretum and the Metropolitan system of parks in Boston; have seen the Back Bay Fens converted from a swamp into a garden; and here I desire to say that in all which tends to the advancement of horticulture along its best and broadest lines, the Massachusetts Horticultural Society has played and is playing a most prominent part. The "Boston" Fern has impressed itself on the horticulture of the day. Begonia Gloire de Lorraine has appeared, and this reminds me of how much we owe to Lemoine, Bruant, and other foreign hybridizers for improved heliotropes, syringas, begonias, fuchsias, pelargoniums (geraniums), chrysanthemums, roses, etc. There are other plants which signalize the quarter century, but I feel that I have named enough to show the progress made. It was my intention to devote some time to the advancement in small fruits but I understand that the subject has been covered by another.

The literature of the day and period must not pass unnoticed. We have the trade press already alluded to, "How to Grow Cut Flowers," an excellent book, Scott's "Manual," full of practical knowledge; we have the new editions of Peter Henderson's earlier works and his "Handbook of Plants." The Violet has been treated in a volume by Galloway, Mushrooms in another volume by Falconer, Sweet Peas have been treated by Hutchins, Dahlias by Peacock, Chrysanthemums by Morton, Barker, and others, Greenhouse Construction by Taft, besides other literature on horticulture. We are now receiving that comprehensive work

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"The Cyclopedia of American Horticulture" by Bailey, to whom we are indebted for so much already. The Experiment Stations have sent out numerous reports on various matters so that the literature of horticulture has kept pace with its practical development. The only regret is that the amateur horticultural journals do not seem to attain the circulation and importance which should be theirs under such general prosperous conditions, but that will come in due time.

It only remains to observe in closing that the quarter century recently finished, and which rounded out the greatest century in material progress which the inhabitants of this planet had ever passed to their credit, is shown, I trust, to be a period rich in achievement for the horticulturist, particularly full of advanced progress, of concrete thought, of practical development for the floriculturist. The utilitarian branches have also advanced; but their greatest progress may well be credited to the preceding quarter century. The æsthetic branch, building on the others, as the airy minarets and graceful arches spring from and rest upon solid foundations and well buttressed walls, has grown full and fair and may well be taken as the fairest gauge of the nation's advancement along the lines of a higher civilization. As we stand on the threshold of a new century full of hopes and aspirations for still greater achievements, it is perhaps well that we should thus pause for a brief period, to beat time as it were in the march of progress, to take a breathing spell, to scan the achievements of the recent past and thereby perchance acquire new vigor for the work before us, or mayhap derive inspiration as we contemplate the great work done in this day and generation. While the commercial florist and horticulturist, as well as the private gardener, are justly entitled to their meed of praise for the part they played in the general advancement, too much cannot be said in laudation of the work of the men connected with the various Experiment Stations. A writer in the Agricultural Epitomist has aptly said: "In this utilitarian age, we are prone to measure success by dollars accumulated, by achievements upon battle fields, or in other tangible spheres, forgetting that back of the most worthy achievements there is science, and that science was likely discovered by some one who loved truth and his fellow man more than he loved himself

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or money. The great army that is delving into the rocks, peering into the sea, reading the heavens, studying the plant, the fowl, the insect, conquering the elements and training them into subserviency to man, translating the language of nature, and flooding darkness with light, is unremunerated except by the satisfaction which the knowledge gives, and the world reaps the benefit."

Discussion.

Jackson T. Dawson said that the lecturer had only reiterated what every one present had seen of the beginning and progress of the traffic in flowers. In 1861 or '62 Hovey & Co. took their flowers to market in a basket. Smith of Cambridge did the same; he used to come to Hovey's nurseries and buy what he had not got. Crosses and other emblems were made in frames of willow or cut out of shingles. Not more than three hundred carnations were grown by any one. Lamarque was the favorite rose. New Holland plants were largely grown. Verbenas, which were then largely grown, have now gone out. *Epacris paludosa*, which has also gone out, ought to be revived. The number of greenhouses then could be counted on your fingers. A drug store on the opposite side of Tremont Street, was one of the largest places for the sale of floral decorations.

E. O. Orpet enquired as to the origin of the carnation Prosperity.

The lecturer replied that he could not give the parentage. It is not equal to Mrs. Thomas Lawson. Growers get them from three and one-half to three and three-quarters inches in diameter.

Thomas Harrison doubted the advantage of such extremely large flowers.

The lecturer thought we could not have too much of a good thing. Carnations will never be put with cauliflowers. We cannot get so many large ones as of smaller sizes. Growers like to get large flowers.

Willlam C. Strong said that he is now out of the line, but he had listened with exceeding pleasure to the lecturer. His last experience was with *Asparagus plumosus*.

William H. Elliott said there was once a great rage for dahlias; afterwards they went out and were scarcely seen. Now they are coming into fashion again.

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The speaker moved a vote of thanks to Mr. O'Mara for his very excellent address, which motion was carried unanimously.

Mr. Orpet enquired of the lecturer what he esteemed the best decorative plant.

Mr. O'Mara replied that the question was a poser, but on the whole he should say Kentia.

He spoke of the development of floriculture at Natick as a revelation in its way, and perhaps the best organization.

At Chicago you can see from the top of the water tower a million square feet of glass devoted to the growth of flowers. The owners were originally market gardeners. At Hinsdale one man, not a florist but a business man, has six hundred and fifty thousand square feet of glass, on the ridge and furrow system.

Edmund M. Wood spoke of the environment of greenhouses. As ordinarily spaced in a house twenty feet wide, the first bed will produce forty per cent more than the second; the first bed shades the other. Ridge and furrow roofs shade one another; if the houses are twenty feet apart they do not.

In development we owe much to disbudding roses; the same treatment was afterwards applied to chrysanthemums. The florists said it would ruin their business, but it proved their salvation.

Mr. Harrison asked whether carnations require any particular soil. Those from other places are of little value when they get here.

The lecturer replied that he was not a carnation specialist, but they require a friable soil well enriched. Formerly it was believed that there was a "carnation belt," where they would succeed much better than outside of it; now it is known that they can be grown anywhere. Once it was thought that they could not be grown at an elevation of more than two thousand feet, but at Denver, at an elevation of six thousand feet, where they have three hundred sunny days out of three hundred and sixty-five, they grow better than at the seashore.

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BUSINESS MEETING.

SATURDAY, March 2, 1901.

An adjourned meeting of the Society was holden at eleven o'clock today, the President, O. B. HADWEN, in the chair.

Ex-President William C. Strong reported that the Boston Co-operative Flower Growers' Association thanked the Society for the offer of one of its Halls for the Annual Carnation Show of the Association, but deemed it best to hold the exhibition in their own room.

The Secretary read a letter from Charles E. Cotting, presenting to the Society, in behalf of the Trustees of the Paddock Building, agreeably to the wish expressed by the Society, the two marble tablets in the staircase hall of the present Horticultural Building. It was voted that the thanks of the Society be presented to the givers for this kind act.

The Committee on Publication were authorized to print the Treasurer's Report as soon as it shall have been approved by the Finance Committee.

It was voted that the Building Committee be instructed to take charge of the removal of the statutes on the building, and the tablets in the staircase hall, before the expiration of the Society's lease of the Building, and report their action to the Society.

It was voted that the Library Committee be authorized to remove the library and library furniture to the new building, and that the Superintendent of the Building have charge of the removal of all other property of the Society.

It was voted that when any report deemed too long to be read in full is presented by either of the Standing Committees of the Society, the Chairman be requested to make a condensed statement of the salient points.

The decease of Edwin C. Lewis was announced, and Warren Howard Heustis, Patrick Norton and Joseph H. Woodford were appointed a Committee to prepare memorial resolutions.

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The decease of Augustus Parker was announced by Ex-President William H. Spooner and it was voted that a Committee of three be appointed by the Chair to prepare a memorial of him. The Chair said that he would announce the Committee at the next meeting.

The Secretary announced the decease, on the 5th of December, 1900, of H. W. S. Cleveland of Chicago, Ill., and said that as a landscape gardener he was one of the foremost men in the country. He was associated with Robert Morris Copeland, and afterwards, at Prospect Park, Brooklyn, N. Y., with Frederick Law Olmsted. He had charge of many important works, among them being parks in Providence, R. I., Chicago, Ill., Brunswick, Ga., St. Paul and Minneapolis, Minn., Omaha, Neb., Sleepy Hollow Cemetery, Concord, Mass., and the grounds about the Natural Bridge, Va. His book on "Landscape Architecture as applied to the wants of the West" and several addresses on parks and kindred subjects were presented by him to our Library. At one time he engaged in the culture of fruit at Burlington, N. J., and was for twelve years Corresponding Secretary of the New Jersey Horticultural Society. During this period he attended the first meeting of the American Pomological Society. He was elected an Honorary Member of this Society in 1848.

It was voted that the Secretary express to the family of Mr. Cleveland the esteem and respect in which he was held, and that the same action be taken in regard to Mr. John Galvin, who died on the 24th of February.

The following named persons, having been recommended by the Executive Committee for membership in the Society, were upon ballot duly elected:

Mrs. Charles T. White, of Boston,
Harry E. Fiske, of Wollaston,
Charles A. Stone, of Newton.

The meeting was then dissolved.

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MEETING FOR LECTURE AND DISCUSSION.

SATURDAY, March 9, 1901.

A meeting for Lecture and Discussion was holden today at eleven o'clock, the President, O. B. HADWEN, in the chair.

The following lecture was delivered:

FRUIT GROWING IN NEW ENGLAND AND ITS DEVELOPMENT DURING THE LAST FIFTY YEARS.

By HON. AARON LOW, Hingham.

If we go back fifty years we find that the culture of the various kinds of fruit adapted to our New England climate was in small amount as compared with the great importance in our productive industries that it holds at the present time. Then there was but a very small amount of grafted fruit, of the varieties which now are in great demand, and which are produced in immense quantities.

APPLES.

The apples then were produced mostly from orchards of natural fruit, as but few of our first-class apples of the present time were much disseminated then; in fact many were not then known.

There is no doubt that the apple stands first in commercial importance as being more largely cultivated than any other species of fruit. Scarcely a farm can be found in New England but has its apple orchards, and the products have ever been considered as the most profitable of the farm. Within fifty years there have been many new varieties of apples introduced, so that now in setting out an orchard we have a much larger number of choice varieties to select from than formerly.

There is no other variety as largely cultivated in New England as the *Baldwin*. It is well adapted to our climate, as it was originated in Massachusetts; is of strong, vigorous growth, an immense bearer of large, handsome red apples, and stands ahead of every other variety as a salable winter apple. The quality is first class for eating or cooking. I think there are more trees of this apple set out than of all others in New England.

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Another first class apple well adapted to our climate is the *Rhode Island Greening*. This is a large green apple of excellent quality. Tree of strong vigorous growth, producing large crops of fine handsome fruit, fine grained, and of rich acid flavor. This I think stands next to the Baldwin as a profitable variety for orchard culture.

As one of the best winter keepers the *Roxbury Russet* is valued very highly. Twenty-five years ago this was much more profitable to grow than it is at present. Within a few years it has developed a tendency to mildew the fruit, and the apples do not grow as large and fair as formerly. Under present conditions it is not advisable to set out many trees of this variety.

The *Porter* and *Hubbardston Nonsuch* years ago were two of our best and most profitable fall apples, but for a number of years past a small worm has done a great deal of damage to the fruit of these two varieties as well as most varieties of sweet apples. It is called the Apple Maggot. Its method is to tunnel through the pulp of the apple in winding channels, thus rendering it worthless.

Without doubt the most destructive insect to our fruit is the Codlin Moth. According to Professor Slingerland the damage caused to the fruit crop by this insect alone amounts to many millions of dollars yearly. In 1892 this insect is said to have caused a loss of $2,000,000 to the apple growers in the single state of Nebraska. In the state of New York it is estimated that the damage to the apple crop yearly is $2,500,000, and the damage to other fruit enough to bring the total loss up to $3,000,000, or, in other words, the fruit growers of New York furnished this amount yearly to feed this destructive little insect.

The rapid multiplication of destructive insects has made it a necessity to the fruit grower to adopt such means as are most effective in checking their injuries to the fruit in the first stages of its growth, or immediately after the fall of the blossom. There is no more effective method that we can employ than to spray our fruit with the various insecticides as per the formulas of our Experiment Stations.

As an early variety, the *Williams* ranks very high. It originated in Roxbury. On rich strong land and given high cultivation

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this is always a first class apple. Of good size, bright, handsome red color, mild and agreeable flavor, this is one of the most salable apples known, and usually brings large profits.

Red Astrachan is one of the earliest varieties. This is a very handsome apple, brilliant crimson color with a thick bloom, flesh acid, and of marked excellence in cooking. Tree a strong vigorous grower, and very productive. Fruit should be picked a few days before it is ripe, as it does not keep well if allowed to become fully ripe on the tree.

Duchess of Oldenburg. This apple is of Russian origin. Large, very handsome, streaked with red and yellow. Flesh yellowish white, sub-acid, excellent for cooking. Tree very hardy, a strong grower, an early and abundant bearer.

One of the most desirable of our fall apples is that superb variety, the *Gravenstein*. This is a large, handsome, striped apple, of the highest flavor and quality, and usually commands the highest prices. On strong, rich land it is one of the most profitable apples grown.

Many people prize a good sweet apple very highly. There is no better variety as an early sweeting than *Sweet Bough*. Fruit large, greenish yellow, very tender and sweet.

As a later sweeting for use from November to March, the *Jacob's Sweet* is a first class apple. Large to very large, yellow, splashed with red. Excellent to eat or bake.

King of Tompkins County is one of our largest and most showy red apples. Tree a strong grower and a good bearer. Fruit deep red; flesh tender, juicy and high flavored. Keeps through the winter. One of the best.

Fameuse or *Snow Apple*. This variety when well grown is one of the handsomest apples known, and usually sells at high prices. Of late years it has been inclined to mildew and this detracts from its value. Medium in size, deep red on a whitish ground; flesh very white, juicy, with an exceedingly pleasant spicy flavor.

Golden Russet. This is an old variety, but of such rich, spicy flavor that it is a universal favorite. Fruit medium size; skin of a decided yellow russet color, flesh tender, juicy and rich. Tree a vigorous grower and very productive.

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There have been within a few years past quite a number of new varieties of apples introduced combining many desirable qualities as first class fruit, and originating in our own country. As one of the most promising of these new varieties *Sutton Beauty* ranks high. This is a good sized, handsome, reddish apple, of first class quality for the table or for cooking. Tree an exceptionally fine grower and of handsome shape; foliage bright, glossy green, and always healthy. A regular bearer of choice apples of fine quality.

McIntosh Red. This originated in Canada and is an exceedingly valuable kind. The fruit is dark red; flesh white, tender, juicy and of rich flavor. A regular bearer, resembling the Snow apple but of larger size and more hardy and not subject to mildew. It is a very desirable variety for orchard culture.

Wealthy. This apple originated in Minnesota. The tree seems to be perfectly hardy, and has given excellent satisfaction whenever it has been fruited. The fruit is of medium size, bright red streaked with white. Flesh white and of fine quality. Tree strong and healthy, one of the best for orchard setting.

Palmer Greening. This variety is not much disseminated but is one of the best in quality. The tree is not a very vigorous grower, and is said to be better when top-worked on strong growing varieties. The fruit is yellowish green, and of a peculiar rich aromatic flavor. A very good keeper and a very promising variety.

Wolf River. Originated in Wisconsin. The fruit is very large and handsome. Specimens of this variety at last fall's fruit exhibitions attracted more attention than any other. Fruit bright red, flesh white and of fine quality.

Pears.

The pear when grown in its full perfection is highly esteemed for its rich, sweet, and delicious flavor. As this is adapted to closer planting than the apple it is usually set in the home garden, as a greater variety of fruit can be had. Some of the best varieties of pears seem to do better when set as dwarfs grafted on the quince; in that case the trees can be set from ten to twelve feet apart. My experience has been that far better specimens can be grown on dwarfs than on the standard trees.

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Angouleme, Louise Bonne of Jersey, Anjou, Vicar and Clairgeau are varieties much improved in the quality of the fruit when grown as dwarfs. Of the varieties more commonly grown Bartlett, Bosc, Sheldon, Seckel, Winter Nelis, Clapp's Favorite and Lawrence do best as standards.

As a variety adapted to almost all localities the *Bartlett* stands first. Fruit of large size, clear yellow, flesh fine grained, exceedingly tender and buttery and rich flavored. Tree a good grower, comes into bearing young, and is very productive.

Clapp's Favorite as a summer pear is a very fine variety when picked before fully ripe. Fruit of good size; flesh melting, juicy and sweet but sometimes inclined to rot at the core. Tree vigorous and healthy.

When we consider the highest standard of quality in richness and flavor the little *Seckel* stands at the front. Although it is one of the smallest pears we have, from its exceeding sweetness and unequaled rich flavor no collection is complete without it.

Dana's Hovey. This is also a small pear, but from its rich and delicious flavor is very highly esteemed. The tree is a very handsome grower and is very productive; fruit keeps till winter.

As one of the largest pears of high quality grown, the *Angouleme* will give as good returns to the grower as any, especially when grown on dwarfs. The fruit is very large, of fine appearance, always commanding a ready sale.

Louise Bonne of Jersey is another variety that does best on quince. This is a large sized, longish pear, greenish in color with reddish shading on the sunny side. Flesh very juicy and melting with pleasant sub-acid flavor. Tree a good grower and productive. This variety when well grown is very profitable.

Anjou. This pear, introduced many years ago by that veteran pomologist, Hon. Marshall P. Wilder, is one of the most valuable grown. Its reliability, uniform good quality, and long keeping, render it one of the most profitable varieties in cultivation. Fruit large, fine grained, with a rich vinous flavor. It does exceedingly well on the quince.

Clairgeau. This is one of the largest and handsomest pears in cultivation, also one of the best to grow on the quince. The fruit is yellow and red, and although not of the best quality is, from its

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large size and handsome appearance, very salable. Tree a good strong grower and an early and abundant bearer. A valuable variety.

Lawrence. One of our best winter varieties. Fruit medium in size; flesh buttery, juicy and very sweet. Tree a moderate grower, but very productive.

Bosc. Truly a magnificent pear. There is no other pear combining as many first class qualities as this. The fruit is large, always perfect, and of the highest flavor, is distinct in form, of a deep yellow russet color. The flesh is white, juicy, with a rich delicious perfume. It sets its fruit singly scattered over the tree, as if it had been thinned, thus producing fine handsome pears. The tree is a good bearer but not a vigorous grower and does better when top worked on such strong growing varieties as Keiffer and Vicar.

Vermont Beauty. This is a handsome, medium sized, yellow pear with a bright carmine cheek. The flesh is rich, juicy, and aromatic, resembling the Seckel, which variety it immediately follows in ripening.

Worden-Seckel. This is a new variety, originated in New York. Fruit of medium size, flesh fine grained, juicy, and of excellent quality. Very promising.

Hardy. This is a large russet pear. Tree a strong grower and abundant bearer of handsome smooth fruit, with rich, slightly sub-acid flavor. It ripens in October. Very desirable.

Boussock. A large roundish pear, yellow when ripe, with a slight reddish cheek. Tree a vigorous grower and good bearer. Ripens the middle of September. A valuable and reliable pear.

Plums.

The cultivation of the plum has largely increased within the last ten years. The old varieties became so subject to the disease of the black-knot, that the trees soon died and it was almost impossible to raise a full crop of plums.

The introduction of the Japanese varieties created a new interest in growing plums. The trees proved to be not subject to the black-knot, neither were the small plums injured by the curculio nearly as much as the European or American varieties. Since

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their introduction the better varieties of the Japanese plums have been largely set out. The trees are well adapted to our soil and climate, and appear to be less subject to disease than the old class of plums. There are quite a number of varieties of Japanese plums much superior to our old American or European kinds in quality of the fruit as well as in the vigor and healthiness of the trees. I will briefly notice some of the better kinds, with the principal points in favor of each.

Abundance. This was one of the first introduced, and is a first class variety in every respect. Tree a strong upright grower, coming into bearing very young. It is extremely productive of large handsome plums, of a bright cherry color with a heavy bloom. Flesh orange yellow and of a sweet, rich, sprightly flavor. Decidedly a great acquisition.

Burbank. With many this is reckoned as the best variety of the Japanese plums. The trees are very strong growers, inclining to spread their branches irregularly and coming into bearing very quickly. It usually sets the fruit very thickly and it is much better to thin the plums out severely, as those left will make much larger and handsomer specimens. The fruit is dark red to bright amber in color, roundish in shape and of good size. Flesh amber yellow, juicy with rich sugary flavor. If you have a place for but a single tree set the Burbank.

Wickson. This variety was originated by Mr. Burbank of California, and was obtained by crossing the Kelsey plum with Burbank, and is considered by him the best of the Japan plums. The tree is an upright, very strong grower. Fruit medium in size, glowing carmine with heavy white bloom. Flesh yellow, spicy, sub-acid, good. I have not fruited this variety as my trees are but two years set, but they are now covered with blossom buds for the next year. This has not been as thoroughly tested as Abundance and Burbank, but those who have fruited it speak very highly of it.

Satsuma. Another Japanese variety, but different from all the others, having a bright red flesh; is much prized for making jellies or preserving.

Hale. This was recently introduced, and although not fully tested is considered very promising. Fruit large, bright orange, mottled with cherry red and of extra fine quality.

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Although many of the European and American varieties of plums are subject to the black-knot, still they are such strong, vigorous growers, and so exceedingly productive in fruit, that some of them are well worth risking to set in our plum orchards. When well taken care of, and the black-knot at its first appearance carefully cut out and burned, the trees will give heavy crops of very choice plums.

Bradshaw. This is one of the best; a very large dark purple plum; flesh brownish purple, juicy and of good quality. Tree a strong vigorous grower, setting its fruit well over the tree, and does not need thinning as much as some other kinds. Ripens the last of August.

Lombard. This is a variety of American origin, and taking all of its good points I think stands highest in the entire list of European or American varieties. The tree is a good grower, and immensely productive of plums of good size and very good quality. This variety usually sets its fruit so thick that it should be severely thinned to have the fruit grow to a good size and mature well; besides, the plums are not as liable to rot as when growing thick.

Pond's Seedling. This is of English origin and truly a magnificent variety. The fruit is large, reddish violet in color, juicy, and of fine quality. Tree vigorous in growth and an abundant bearer.

Smith's Orleans. This is a wonderfully productive variety. Fruit large, reddish purple; flesh firm, juicy, with a rich vinous flavor. The trees do well in all soils. An American plum, originated on Long Island.

Lawrence. This is also of American origin. Tree thrifty and productive. Fruit yellowish green with a light bluish bloom. Flesh melting and rich flavored. An excellent variety.

Peaches.

Peaches when well grown are the most delicious of all of our fruits. But as the trees are very tender and with difficulty withstand our changes of climate, success in growing first class fruit is quite uncertain.

One of the most serious troubles in peach culture is the late frosts in the spring. If it is mild and warm in early spring and the peach buds start to grow, and then follow late frosts, the blossoms are often ruined and the crop is lost. The trees should not

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be forced to make too large a growth, as a moderate growth ripens better and makes a harder, firmer wood, not as liable to injury from cold.

Among the great number of varieties now cultivated, the more choice kinds should be selected, and if well cared for we may get a good crop of this delicious fruit.

The peach is a rapid growing tree and comes into bearing at an early age. The trees do best on light warm land and should not be fertilized with stable manure, but with wood ashes, bone dust, and nitrate of soda, as this combination gives a more hardy and stouter growth, and a better development of fruit buds.

Among the many choice kinds I will select such as seem best adapted to our locality.

Early Canada. This is one of the very earliest, of good size, fine quality and fine appearance.

Early Crawford. A magnificent large yellow peach of excellent quality. Tree vigorous and productive. One of the best.

Coolidge's Favorite. A large white peach with crimson cheek. Flesh juicy, sweet and of rich flavor. Ripens about the middle of August. Very desirable.

Crosby. This is said to be the hardiest of all peaches to withstand our cold winters. Fruit bright orange yellow, sweet and of good flavor. Tree vigorous and healthy. An excellent variety for orchard culture.

Elberta. A large yellow peach of recent introduction. Tree vigorous, strong grower. Fruit oval, yellow, with blush on sunny side. Flesh pale yellow, tender and juicy. One of the most desirable of the new varieties.

Foster. Very large, deep orange red. Flesh yellow, very rich and juicy and of excellent flavor. Ripens in September. Originated in Medford.

Globe. A new variety. Strong and vigorous in growth and an enormous bearer. Fruit very large, yellow shaded with crimson. Flesh very rich and luscious. Should be in every collection. Ripe in September and October.

Carman. A new peach, originated by Mr. Carman, Editor of the Rural New-Yorker. This has not been cultivated long enough to determine its full value, but it is very highly recommended.

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Fruit of large size, yellow, shaded with red; flesh juicy and of fine flavor.

Oldmixon. An old variety, but one of great value. Succeeds in almost all localities. Fruit large, yellowish white with a deep red cheek. Flesh red at the stone, tender and excellent.

Stump. A first-class variety. Fruit large; flesh white, very juicy with an excellent flavor; parts freely from the stone. Ripens in September.

Late Crawford. This is the standard late peach. Fruit of large size, greenish yellow, with dull red cheek. Flesh red at the stone, of rich, juicy, vinous flavor. Ripens the last of September.

Grapes.

Grapes can be grown so easily by any one who has but a small extent of land, training the vines on a wall, on a trellis, on the side of a building facing south, or to single stakes, that it is almost in every ones power to grow a few varieties at least for their own use. Light warm soil, well drained, is desirable, as the grapes will mature and ripen sooner than on soil not well drained. Wood ashes and fine ground bone are special fertilizers for the grape, as they will cause the vine to grow shorter jointed wood which will ripen better than long jointed wood. From the great number of varieties in cultivation, a selection of a dozen kinds will give one a good variety of the different colored grapes.

Campbell's Early. This is a very early grape of recent introduction, and wherever tried it is spoken of in the highest terms. It is earlier than the Concord, has a larger bunch than that first class grape and as a long keeper after being fully ripe is unequaled by any known variety. A black grape with very handsome bunch and berry. Ripens in September. Flesh very tender and juicy; flavor sweet, rich, aromatic; quality best.

Green Mountain. This grape was introduced a few years ago by Stephen Hoyt & Sons, New Canaan, Ct. The bunch is of good size; berries medium, greenish white in color; skin thin; pulp tender and sweet. Very early, always fully ripe in August. Vine vigorous and healthy, yielding heavy crops of fine grapes. A very desirable variety.

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Eaton. This is one of the largest grapes in cultivation, both in bunch and berry. Vine vigorous, healthy and productive. The grapes have a tender pulp, and are juicy and of fine flavor.

Moore's Early. This is one of the earliest of the black grapes. Originated in Concord, Mass., by John B. Moore. This grape has been largely set in vineyards, in the grape growing localities, and is very highly esteemed as a reliable, profitable variety. Color black, with a heavy blue bloom. Ripens from two to three weeks before the Concord. Quality excellent. A first class variety.

Worden. A large new variety, a seedling of the Concord. Bunch and berry large size; color black with bluish bloom; fruit sweet and of fine quality. Ripens from one to two weeks before the Concord. No early black grape stands higher than this.

Brighton. A reddish grape of the highest quality, bunch and berry of good size; vine vigorous and productive. Fruit roundish, dark maroon color, flesh tender and juicy with a peculiar aromatic flavor. One of the best varieties for the home garden.

Moore's Diamond. A first class white grape. Bunch compact and shouldered. Berries large, round, juicy, with but little pulp. Vine a good grower, with thick healthy foliage, hardy and productive. Ripens a little before the Concord. Very promising.

Pocklington. Originated in the state of New York. Vine a very strong vigorous grower, hardy and productive. Bunch and berry of good size, color a lemon yellow. Flesh sweet, with a rich aromatic flavor. Has given good satisfaction to all who have grown it.

Delaware. The standard of quality. Bunch rather small; berries medium. The flesh has an exceedingly rich, spicy flavor. Vine not a strong grower; foliage apt to mildew.

Concord. Without any question this old and well known variety, as a reliable and profitable grape, stands at the head of the list. Adapted to a larger extent of our country than any other, it has been more universally grown than all others combined. Not of the highest quality in its fruit, still it combines so many desirable qualities that it is essentially the grape for the home garden. Bunches large and handsome; berries black with a heavy blue bloom. Flesh juicy and refreshing.

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Salem. This is regarded by many as the best of the Rogers Hybrids. The vine is a strong grower, producing large bunches of reddish grapes, with a very sweet and rich flavor resembling that of foreign grapes. An excellent variety.

McPike. This new and wonderful grape is of western origin and is introduced by a western firm. It seems to have astonished all who have seen it on the grounds of its originator, not only in the size of its bunch and berry, but also in its wonderful vigor and the healthiness of its foliage as well as in the tenderness and delicious flavor of its fruit. Bunch and berry said to be fifty per cent larger than the Worden. Flesh ripens to the core, and is of excellent flavor, resembling the Black Hamburg. Wherever it has been exhibited at various State fairs in the west it has taken all first premiums. Another very important point in its favor is its long keeping quality after being fully ripe. The highest authorities in horticulture speak of it as a grape of wonderful qualities and promise.

Small Fruits.

The advancement of the culture of the small fruits in the last fifty years has been phenomenal. Previous to the introduction of the Hovey's Seedling strawberry, by the Messrs. Hovey of Cambridge, in 1836, the varieties of strawberries cultivated were few in number and inferior in size and productiveness as compared with the large number of choice varieties now cultivated.

The originating and introduction of the Hovey's Seedling was a marked advance in the culture of the strawberry. This new variety was a large handsome berry, deep shining red in color, flesh firm and of excellent quality. It was a pistillate variety and was usually set in beds with every third row of the Boston Pine, a staminate variety, to insure perfect fertilization of the Hovey's Seedling blossoms. When fully fertilized it was immensely productive of large first class fruit.

Since the introduction of Hovey's Seedling, strawberry culture has extended over the greater part of the country. Many new kinds of high merit in quality and productiveness have been introduced.

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Since the close of the civil war the culture of strawberries has largely developed in the southern states and our markets now are supplied with this luscious fruit several months in the year.

Many of the new varieties are perfect in blossom and are grown without any other varieties being set with them.

The strawberry is of such easy culture that every home garden should have its plot for family use. Among the great number of varieties I will name a half dozen of the best—Belmont, Marshall, William Belt, Nick Ohmer, Beverly and Sample.

As following the strawberry, raspberries are highly prized for family use. Of the red varieties Cuthbert and Loudon are most desirable, and of the Blackcaps, Cumberland and Gregg are hardy, productive, and of fine quality.

Following in succession come the better varieties of blackberries — Snyder, Erie, Eldorado and Rathburn, first class kinds, producing large crops of berries of excellent quality.

Of that old and well known fruit, the currant, Fay's Prolific, Versaillaise, Victoria, and Pomona as new varieties are improvements on the old kinds of fifty years ago.

The gooseberry in some sections is largely grown. The better varieties now in cultivation, Josselyn, Smith's Improved, Industry, Triumph, and Columbus rank very high, and are not as subject to mildew as many of the older kinds. In the foregoing paper I have endeavored to name varieties in the different classes, which are best adapted to our soil and climate, as demonstrated by many years of cultivation in the different sections of New England. To those not well acquainted with the many varieties of fruits, these lists will, I trust, be a guide in selecting kinds which will be satisfactory in their future experience.

The details of setting out and after treatment I have omitted for the purpose of calling out by questions from the audience different methods and experiences on these points which although essential to know, differ greatly in application in a variety of soils and locations. I trust those present will freely question on any points which they desire to bring out.

Discussion.

Samuel H. Warren inquired as to the character and value of the Early Canada peach.

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The lecturer replied that it resembles other very early peaches and like them will sometimes spot with rot.

Varnum Frost said that he could not agree with the lecturer in regard to some of the pears recommended by him. The Anjou has great failings; it is apt to be infected with spots of black fungus. Some have grafted their Anjou trees with Bartlett. The Keiffer pear is worthless.

The lecturer said that many peaches reproduce themselves from seed, the Melocoton, for instance. He had an orchard of Roxbury Russet and Baldwin apples which interlocked, and some of the limbs of the Baldwin trees showed a mixture of Russet, and some of the Russets showed the influence of the Baldwin pollen. The Keiffer pear is valuable to top graft with Bosc and other poor growing sorts. We should remember that kinds which do poorly with one may do well with another.

Mr. Frost said that the Hovey's Seedling strawberry used to grow with only the Boston Pine to fertilize it; there was nothing to surpass these two kinds. The Boston Pine was never beaten as regards flavor.

The lecturer spoke of a neighbor who raised fine Hovey's Seedlings and set out a bed for a friend which never bore.

E. W. Wood said that there had been no particular improvement in fruits in the last twenty-five years — not as much as in flowers. One man has done perhaps more than any other man in the country,—Luther Burbank. He originated the Burbank potato many years ago while residing at Worcester. Afterwards he went into the nursery business in California and devoted himself especially to originating new fruits. The speaker wished that we might have many more young men disposed to undertake the improvement of fruits. This can only be done by cross fertilization. We have none worth growing that were not grown twenty-five years ago. An Ex-President of this Society was about to set out an apple orchard of six hundred trees, and went to Mr. Curtis, one of the largest dealers in apples, to get his advice as to the best kinds to plant. It was solely a mercantile operation and Mr. Curtis advised him to set out five hundred Baldwins and the other hundred of different varieties, but on second thought he advised to plant all Baldwins. No other apple will return so many dollars

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to the grower as the Baldwin. The speaker said that if he were a young man he would buy up land which can be got at a very low price and plant it with Baldwin apple trees.

Fifteen years ago no pear was so profitable as the Anjou, but within the last five years it has been failing. The Bosc is one of the best. The speaker esteems the Dana's Hovey the best pear grown; it requires thinning to get the fruit of good size. The Clairgeau would never be put into a list of pears for home use. It is purchased by hotel-keepers because it is as handsome as a bouquet and lasts tremendously.

There is scarcely a strawberry seen on our tables now that was grown fifteen years ago, and most of the kinds have been introduced within five years. We can get new varieties very quickly and there seems to be a prospect of continued improvement.

Great additions have been made to our fruits in the way of Japanese plums. Some have found them to rot even after thinning. At the Agricultural College the buds were reported to be as tender as those of peaches.

Market growers are very careful about planting blackberries or raspberries. There has been a great advance in transporting fruit within a few years, so that we now have strawberries in our market nine months in the year, and the quantity of fruit sold has doubled and tripled.

Samuel H. Warren said that fifteen years ago he set out a hundred Black Heart cherry trees, and last year he pulled up all but five and headed those back.

Mr. Frost said that he did not believe in apples mixing by cross-fertilizing; the Baldwin, Porter and Hubbardston are just the same as they were fifty years ago.

The lecturer said that the change produced by cross-fertilization is not in the fruit, but in the tree produced from the seed. The Marshall strawberry does not flourish everywhere. The conditions of fruit growing are very different now from what they were forty years ago.

John Ward said that he planted Hovey's Seedling strawberry with Early Virginia on one side, and for the first rod he got a good crop and beyond that none. The influence of the pollen of the Virginia did not extend beyond the first rod. There is no

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better strawberry now for quality than the Hovey though some kinds are more productive. When he was a boy the St. Michael pear began to crack, and the Anjou is now becoming spotted and cracked, as may be seen by some in the market. The Bartlett seems to stand when others do not. There is no better pear than the Bosc. There is danger of overdoing the business of raising late pears; there is no demand for them after the first of December.

Joshua C. Stone asked, what is the use of setting out trees? Life is too short. People want green leaves more than they do fruit trees. There are as good apples and pears raised now as ever there were. He knows one man who has all kinds of fruits and has been forty years raising them, who is going to move away his seven thousand dollar house and put in a twenty thousand dollar house. The speaker dug up all the apple trees he had in good ground and has grafted over all his Baldwins and put in Williams and other new apples.

The lecturer said, in reference to Mr. Stone's remark that life is too short to justify planting trees,—Suppose you do not get a crop of fruit, somebody will come after you to get the benefit of your work. [Applause.]

Benjamin P. Ware said that the Essex Agricultural Society some years ago offered a premium of one hundred dollars for an apple as good or better than the Baldwin, but it has not yet been taken. He advised planting orchards in a hill town, and when the trees were just coming into bearing the owners got four or five dollars per barrel for the fruit in a year when apples were scarce. He asked whether Mr. Stone could make us believe that people are getting out of the way of eating fruit. When Luther Burbank wanted to go to California, where he is now a great originator of new fruits, J. J. H. Gregory paid him a hundred dollars for the Burbank potato, which set him up there. This variety is very popular through the west and in Europe.

Michael Sullivan had heard it said that the average market gardener has no respect for an apple tree, which may be true. Sixteen years ago he had no apple trees on his homestead, but twelve years after he had one of the finest crops of Baldwins. Last year he would have had a good crop but for the high wind in September, but he put fine apples into his cellar. Land is

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getting too valuable for orchards in the vicinity of Boston, as at Revere.

William C. Strong said that a great many of the new plants cultivated by florists have been imported from abroad, but a much longer time is required in producing new varieties of tree fruits than of flowers.

Many years ago he bought the largest grapery in the country, and raised in it three tons of grapes annually which sold for from one to three dollars per pound; now we get them from California for twenty cents per pound. The apple is the fruit of Massachusetts. Messrs. Wilder and Hovey had two or three hundred varieties of pears, and could get six, eight or ten dollars per bushel for them, many varieties of which could not now be given away. He would not plant six hundred pear trees all Bartlett, though. We want to confine culture to a few varieties. He would discard Clairgeau and Keiffer; we want better kinds.

Mr. Wood said that florists here do not go abroad for new chrysanthemums; we have better varieties here than can be found in Europe.

Joseph H. Woodford said that we have the markets of the world and all the surplus fruit can be sold abroad. We can get better prices for fruit there than we can here. A young man can set out fruit trees and have a bank which in fifteen years will yield dividends. Though not a young man he means to set out a hundred trees this year. He thinks it every man's duty to set out fruit trees; somebody will come after us who will profit by them.

President Hadwen said that in 1842 he planted the seeds from which his apple orchards have grown, and when they attained a proper size he budded them in the nursery. Nature has never produced but one Baldwin, one Gravenstein, or one Rhode Island Greening apple. The Baldwin is the apple for the million, but the million do not know the best. Persons educated in a knowledge of the best varieties do not buy Baldwins. They are put up in carloads for wholesalers; his apples go to other parties. The Foundling is one of the best apples; it is a native of Worcester County.

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The lecturer said that his father set out an apple orchard when about sixty-eight years old, and lived to sell hundreds of dollars worth of fruit from it.

Mr. Stone spoke of a man who bought ten thousand barrels of apples for a dollar a barrel and paid twenty-five cents apiece for barrels to put them in.

MEETING FOR LECTURE AND DISCUSSION.

SATURDAY, March 16, 1901.

A meeting for Lecture and Discussion was holden today at eleven o'clock, the President, O. B. HADWEN, in the chair.

The following lecture was delivered on the John Lewis Russell foundation:

STUDIES OF SOME TREE-DESTROYING FUNGI.

By Professor GEORGE F. ATKINSON, Cornell University, Ithaca, N. Y.

When invited by your Committee to give the lecture this year on the John Lewis Russell foundation, I understood that the subject was to be in general, "Parasitic Fungi." It was but a week ago that I learned that the foundation for these lectures on parasitic fungi was made by Professor Russell for the purpose of presenting the "latest discoveries of the connection of the Fungi with Horticulture." It was then too late to think of changing the subject of this address to deal more particularly with the latest discoveries of fungi in relation to horticulture. But I trust that the subject I have chosen will be none the less acceptable. For while the studies which I am to present have been made chiefly on forest trees, some of the observations have also been made on fruit trees and shade trees. In a number of cases the same species of fungi are enemies both of fruit trees and forest trees, while the general problems of the entrance of the fungus and its progress in the tree are the same. The subject contributes very materially, if not directly, to the interest of horticulture.

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The fungi of which I shall speak are sometimes called "wood-destroying fungi," because a number of them are known to infest timber and cause its decay. Few of them can enter a thoroughly sound tree — that is, they cannot from the outside gain an entrance unaided through the living layer of tissue, the cambium. The cambium envelops the entire tree, root and branch, and thus in an uninjured condition constitutes an effectual barrier against many of these tree enemies. For their entrance they are usually dependent upon other means than their own activities. These places of entrance are wounds from mechanical injuries due to a great variety of causes, wounds caused by truly parasitic fungi, and lesions caused by the natural process in shedding the lower limbs, when the process of healing over may be slow. For the reason, therefore, that quite a large number of the tree-destroying fungi enter through wounds, they have been called also "wound parasites."

I shall not attempt to review all the good work which has been done on the subject, but you probably recall the first address delivered on an occasion similar to this, by Dr. Farlow, on "Diseases of Trees likely to follow Mechanical Injuries." Mention should be made of the important work done by Professor Hartig in Germany on diseases of forest trees.

My own studies of this subject began about five years ago, and the results have been accumulating since that time, while very little of the matter has as yet been published. It has been my plan, as far as possible, to select one or more individual cases and then endeavor to trace the history of the relation of the fungus and its host. This would include a study of the present conditions, and an effort to determine, by examination, the time in the past when the fungus entered, the mode of its entrance and progress, as well as the probable cause of the wound which provided the entrance court for the tree enemy. In a number of cases these have been worked out quite satisfactorily. The studies have been made in New York State, chiefly at Ithaca and in the forests of the Adirondack Mountains.

Photographs have been made from time to time during the progress of the studies, and with the aid of them I hope to reveal the history of those cases to you.

A word might be said at the outset in regard to the relation of

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these wood-destroying fungi to others, as well as in regard to their structure. They are among the higher fungi and belong to the larger group known as the *Hymenomycetes* to which the mushroom also belongs. In fact it is becoming customary with some to apply the term "mushroom" to all of the *Hymenomycetes*. However widely these plants differ in their form and structure they all agree in the general character of their fruiting surface. It forms a thin layer, or "membrane," covering definite parts of the fruit body, and consisting of innumerable club-shaped cells standing side by side. Each one of these club-shaped cells is called a *basidium*, and usually bears four spores.

There are several large families, or orders, in the group. I will call attention to a very few in each family in order to show more definitely the form and general character of the species which we will examine more carefully. In one of these families the fruit body is often spread over the surface of the wood in thin smooth patches, or some forms are shelving, when the underside is smooth and is the fruiting surface. These belong to the family *Thelephoraceæ*. A few of its members are very destructive to wood and some are parasites on trees. In another family the members are known as *coral fungi*, a large number of them belonging to the well known genus *Clavaria*, from which the family name *Clavariaceæ* is derived. The fruiting surface is distributed all over the surface of the plant. To a third family, *Hydnaceæ*, belong the hedgehog fungi, with the fruiting surface on spines, a few species of which are well known. A number of the members of the two last named families grow on wood, but often appear in late stages of decay. A few species like *Hydnum septentrionale* on maple, and *H. Schiedermayeri* on apple, are destructive.

The two largest families are known as the *Agaricaceæ*, to which the common mushroom belongs, as you well know, and the *Polyporaceæ*. In the latter family the fruiting surface is in the form of a honeycomb on the underside of the fruit body. It is to this last named family that the species belong of which I shall speak at some length.

Polyporus borealis.

Polyporus borealis occurs on pines, spruces, the hemlock, etc., and is widely distributed over the North Temperate Zone. It

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occurs on living or dead trees, and is a "wound" parasite, entering through broken branches, through wounds caused by impact of falling timber, or where the cambium has been scorched by fire. The fruit bodies are entirely white. When old or dry they often take on a pale yellowish tinge. They are shelving, the cap attached directly to the tree, broad at the free end and tapering somewhat in a wedge-shaped manner toward the base. They are rarely single, and sometimes scattered over the trunk. They usually occur several close together overlapping in an imbricated fashion, and joined at the base in a common trunk at the exit from the tree.

The fruit bodies are rather soft and spongy. They last only for the season. They are from ten to twenty centimeters (four to eight inches) long by six to fifteen centimeters broad. They form larger masses where several are joined. The upper surface is rough with coarse tufts of mycelium giving it a very shaggy or hispid appearance. The honeycombed surface is below. The hymenium consists of quite regular pores with rounded openings in some specimens, or irregular, elongated and sinuous pores in other specimens, resembling the pores of *Dædalea*. But they are evenly sunk in the substance of the cap and therefore lack the essential character of that genus. The walls of the pores are thin, and the edges often irregular and jagged.

There are two cases of its occurring on living coniferous trees which I have carefully studied. One case is that of a hemlock spruce (*Tsuga Canadensis*). The other is that of a red spruce (*Picea rubra*), the common timber spruce of the Adirondack region.

The hemlock spruce was a large tree, sixty centimeters (two feet) in diameter, on a steep slope in one of the deep gorges (Fall Creek) at Ithaca, N. Y.

This example was observed in the autumn of 1899. The fruit body of the fungus was situated on a large wound on the trunk near the base. It consisted of several caps closely joined at their origin from the trunk of the tree. A section through the entire fruit body showed the radiating lines formed by the general direction of the mycelium in the caps from their common origin in the tree trunk.

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We have a clue to the manner in which the mycelium of the fungus entered this particular tree. A log lying in the foreground, close by the trunk of the affected tree, told the tale. This tree in its descent, years ago, struck the slightly projecting base of the standing hemlock, and knocked off a large area of the bark and cambium, or growing region, at this spot. This wound was too large and the tissues too much bruised to permit rapid healing over. It offered therefore a sure infection court through which the mycelium entered.

It was also shown that the healing has been going on for a long time from the margin of the wound. But the wound is so large it is yet far from being healed. Had it later healed over, it could not, of course, save the tree from destruction because the wound parasite was already permanently established in the interior, or heartwood. Thus the wound which gave entrance to the fungus mycelium also offers a place for its exit in the formation of the fruit body.

From the time the mycelium entered the trunk at this wound, which must have been from twenty-five to forty years ago, the mycelium gradually made its way into the heart, and from there grew downward into the roots and upward through the heart to the top of the tree. Its presence on the roots was determined by the occurrence of the fruit bodies from a few places on exposed parts of the large roots, while external evidence of its having reached the top of the tree was shown by a number of dead limbs in the top, some of which had fallen. Evidence of its having reached the top was also found on cutting down the tree, and taking out sections at different points in the trunk. Here was found an abundance of mycelium and the heartwood was in an advanced state of decay.

The mycelium advances in certain definite directions in the wood of the tree. This is probably due to the structure of the wood. It grows in three different directions: parallel with the axis of the tree trunk, *i. e.*, up and down; radially, from the center toward the periphery; and tangentially. At one stage of development the mycelium may be very profuse and abundant. It then is present in the form of cords or strands which lie radially or tangentially in the channels which have been dissolved by

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the action of the fungus ferment on the wood. These strands lie quite close together and are parallel. After being developed in considerable abundance the strands of mycelium largely disappear leaving behind open channels and furrows through the wood in the radial and tangential directions.

Shrinkage of the wood occurs at the same time because of the disappearance of a considerable content of the water and of the wood substance. This shrinkage results in checking the wood into numerous minute cuboidal blocks, marked off primarily by the position and solvent action of the mycelium. This becomes more pronounced as the wood dries, if the tree is cut, or if blocks of the wood are cut from the trunk and allowed to dry. In the early infection of the wood, and the early stages in the advance of the mycelium, before the larger strands have become established, the openings made by the mycelium are very minute. They take the same direction as the larger opening. In fact, the mycelium, instead of making a general attack upon the tissues, begins its advance at certain regularly separated points, and then extends along in parallel lines. If the wood is cut out at this early stage, one can see these minute perforations thickly scattered over the exposed surface. Sometimes, even in this early stage, shrinkage of the wood will have taken place. If not very marked when freshly cut from the wood, the shrinkage of the wood on drying marks it off in a beautiful manner, by fine lines and holes, into cuboidal areas.

In many of these cases of the heart rot of trees, after the heartwood is well affected, the mycelium, being well established and vigorous, gradually encroaches on the cambium or living area beneath the bark. In this way, many of the branches in the top of the tree die, and in some cases later the cambium of the trunk may be so destroyed as to kill the tree outright.

The red spruce example, in the Adirondack woods, was a tree of handsome proportions near Piercefield Falls, on the Raquette River, left by the lumberman a few years prior to 1896, the season when I observed the tree. At some distance there was no indication that the tree was diseased and I enquired of my guide, who had at one time some experience in cutting timber, why the tree was left. "That tree ain't no good," he replied. As we ap-

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proached nearer, he said, "Don't you see the gum running from all the knot holes?" This, he explained, was regarded as a sure sign of "heart rot." Furthermore the tree was "checked" on one side, the crack being quite large and extending for some distance. The check was probably caused by a wrench given the weakened tree during a heavy wind. There was no other external evidence that the tree was diseased, and to satisfy myself that the tree suffered from "heart rot," I had my guide cut out a few blocks of the wood from the trunk. Two inches beneath the bark the wood was found in a "dozed" condition. The heart was not in a very advanced stage of decay though the area was very extensive. The mycelium visible to the eye was very scanty. Still the wood showed numerous fine perforations, and as some shrinkage had taken place, it presented the very fine divisions into minute blocks described above. I then searched more carefully for some fruit form of the fungus and found at the ground level, buried under leaves, a fruit body of the *Polyporus borealis* between two buttresses of the base of the trunk. The tree was not felled, and consequently there was no opportunity of ascertaining the special mode of infection in this case.

Polyporus sulphureus.

The sulphur polyporus has a very wide distribution and occurs on a great variety of broad-leaved trees as well as on certain of the conifers. It is known on the apple, walnut, butternut, locust, oak, ash, pine, hemlock spruce, and other trees. It occurs on living trees, the fruit bodies growing from knot holes or wounds from the mycelium in the heart of the tree; or the fruit bodies arise from portions of the trunk killed by the fungus. It is also a very common fungus on dead and decaying logs, stumps and roots.

The plant is easily recognized by the yellowish color of the caps, which are of the shelving form, sometimes scattered, but more often closely overlapping. Sometimes the caps are so closely crowded as to form a large tubercle from twenty to twenty-five centimeters or more in diameter. The upper surface of the cap is a bright orange red, while the lower surface, the honeycombed fruit surface, is sulphur yellow. The fruit bodies

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are rather soft, the color soon fades and they are quickly attacked by insects, or decay after several weeks. They are short lived therefore, while the mycelium within the trunk is perennial, or at least lives from year to year without an annual infection.

Oak Tree killed by Polyporus sulphureus. A scarlet oak tree (*Quercus coccinea*) growing near the grounds of Cornell University was under observation for several years. The tree was standing on the edge of the Fall Creek gorge. It was first observed in 1897. At this time the mycelium of the sulphur polyporus had advanced so far from the heartwood into the sapwood, that the latter, as well as the cambium layer, on one side of the trunk near the base, had been killed. This gave an opportunity for the exit of the fungus and the formation of the fruit bodies on the outside. They were fine specimens, but were much more scattered than is usual with this species. The fruit bodies appeared during the succeeding seasons of 1898 and 1899. During the latter season the tree died from the injuries of the mycelium in its advance on the cambium, or living portion, of the trunk. It was felled, and several sections were cut out from the trunk for observation.

The decay of the heartwood had reached an advanced stage so that it was quite soft, and the moisture content was much less than in healthy trees. The lessening of the water content of the heartwood during the growth and spread of the mycelium caused a shrinkage in the wood. This produced several radial checks into which the mycelium had grown forming sheets of pure mycelium, sometimes called "punk."

Polyporus sulphureus imprisoned in a White Oak. A white oak tree about forty years old was growing quite close by the side of a larger tree on the grounds of Cornell University. The tree leaned slightly away from the larger one and there was a one-sided development of the branches induced by stronger illumination from that side.

The tree was felled in order to see if there was a corresponding asymmetry in the annual growth of the trunk which might be manifest in the excentric position of the annual rings. Before cutting the tree down there was no evidence that it was diseased. The

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trunk to all external appearance was sound. There were no broken limbs, no wounds, visible. On cutting the trunk into sections to study the annual rings, the heartwood through a large part of the trunk presented unmistakable evidences of partial decay, following many of the annual rings and along by the medullary rays. The wood in these areas was being disorganized by the mycelium, and the latter was forming the incipient stages of punk.

The case was an interesting one, since the question arose as to how the fungus, now completely imprisoned, gained entrance to the trunk. The butt was sound, so the fungus could not have entered through the roots. Perhaps it entered at a large branch broken a number of years ago and now completely healed over.

All of the sections showed more or less decay at the central core of the heartwood where some of the wood was so badly decayed in some sections as to break out or crumble from the friction of the saw. One of the sections, not far from the base of the trunk, presented on the lower end, and near the periphery, a circular black area, resembling the dead remnant of a branch which might have broken off years ago, and healed over. On the surface of the same side of this section was a prominent enlargement in the trunk, resulting from the healing process. But the evidence of a wound here was largely obliterated because the old bark had formed over the surface. There was only a minute opening, very obscure, which was not completely healed over.

By examining successive sections of the trunk below this one it was observed that this black "core" representing the broken portion of the young tree gradually came to lie exactly in the central core of the trunk. This indicates quite clearly that the injury occurred to the tree in the sapling stage, and that the sapling was broken off instead of one of the branches. One of the upper branches then became the "leader" and in course of time the broken end of the sapling was enclosed by the healing tissue.

This section of the trunk was then sawed through lengthwise and in such a direction as to split the core of the dead sapling radially from the center of the new trunk. A view of one-half of this section was photographed. It showed the origin of the branch which became the new "leader" of the tree, as well as

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the large and irregular end of the broken sapling covered over by the healing tissue.

The cross section shows that this injury occurred more than thirty years ago, very near the time that Cornell University was founded. Some accident, the cause of which we cannot now determine, befell this tree in its youth and the sapling was broken off, while one of the topmost remaining branches in time replaced the main trunk.

An injury resulting from this kind of fracture leaves a long and slivered end some distance from the point where healing takes place. It must be a number of years, then, before the healing process can advance so far as to cover the fracture. In this instance over thirty years elapsed. The broken and slivered end of the sapling offered the most favorable lodgement place for spores of fungi, and for the accumulation of detritus resulting from the constant weathering of the exposed surface. In these places moisture is also conserved. The conditions presented are favorable for the germination of the spores and entrance of the mycelial threads. No more favorable infection court could be provided whereby the fungus is enabled to enter the heartwood.

From this point of infection the mycelium spreads both ways, down the old trunk of the sapling, and upward in the branch which forms the newly established leader. The progress of the fungus is comparatively slow, and the disorganization of the wood accompanies it. The slow growth of the mycelium is probably due to several causes, the resistance which it meets from the wood, the action of tannic acids in the heartwood, as well as to the small amount of air in the interior of the tree. When sections of the trunk were cut, and piled together, the mycelium at the cut surfaces grew very rapidly. The mycelium here had access to air, and the moisture was conserved by the cut surfaces being in contact. In this way it was easy to demonstrate the presence of the mycelium in parts of the wood which to the eye appeared sound. The mycelium grew out from the wood into the moist air, along the concentric annual rings and the medullary rays, so that within twenty-four hours the location of the mycelium at these points was plainly demonstrated, and photographs taken at this time marked the location

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of the mycelium in the infected areas. In several days' time, however, the mycelium spread out between the cut surface forming thin sheets of "punk."

POLYPORUS IGNIARIUS.

This species occurs on broad-leaved trees. It is known on the apple, oak, alder, beech, birch, maple and other species. The fruit bodies are hoof-shaped, very hard, almost stony, the upper surface black, while the lower surface, the fruiting surface, is brownish. The upper surface is marked by concentric furrows and ridges which mark off the annual layers. The fungus is thus perennial.

It is very generally distributed through hardwood forests. It is especially abundant in certain hardwoods in the Adirondacks. In some sections a large percentage of the beech, birch, and maple is affected. A quantity of the wood of affected trees was collected both at Childwood, St. Lawrence County, in 1896, and at Clearwater, Herkimer County, in 1898. At the latter place, the second flag station north of Fulton Chain, on the New York Central Railroad, there were excellent opportunities for studying it on the maple, and for determining the conditions which favor the entrance of the fungus into the heart of the tree. Since the mycelium cannot enter through the living cambium of the tree, an "infection court" must first be provided. These infection areas are provided in a variety of ways, in general their origin being the same as for other timber-destroying fungi which enter through wounds.

The conditions prevailing in a large portion of the mixed forests of the Adirondack region are such that a very common point for entrance is provided by the falling of the lower limbs. In the mixed forests the spruces and pines tower so far above the hardwoods as to cut off much of the light. The hardwoods are thus so shaded that the area of foliage is considerably lessened, many of the trees having few limbs, and then bearing few leaves compared with trees in the open, or even in a hardwood forest where all the trees have an equal chance for light.

A maple tree about twenty centimeters (eight inches) in diameter in the mixed forest at Clearwater had been affected by the

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Polyporus igniarius for a number of years. The fruit body was several years old, of a triangular shelving form, and fifteen centimeters broad. Several entire sections of the trunk, one of them bearing the fruit body of the fungus, were collected and shipped to Ithaca.

Cross sections of the tree present a very characteristic and often beautiful marking of the wood due to the different stages of decay and the coloration of the wood. The more advanced stages of decay lie at the centre, the less advanced ones towards the periphery. The sound wood at the periphery is limited from the decayed area toward the centre by a broad and irregular discolored area. The discolored area is of a light brown color, and this is farther sharply defined from the pale yellowish white area within by a narrow black line. The later stages of decay in this maple tree advanced toward the periphery in separated columns, showing on cross section a radiating or digitate figure. The radiations, or figures, alternate with dark areas which extend inward from the periphery. Sometimes this figure is quite regular around a portion of the margin, while other portions are very irregular. The decay of the wood seems to proceed in waves from the centre toward the periphery, so that there appear several different stages. The outer one is marked by the dark discolored area, the next is pale yellowish white, the wood being quite soft, and an older and more advanced area at the centre of the heart. These different stages in the process of decay from the centre to the periphery are usually limited by the black line, which is bordered by a more or less well defined corona of color, darker than the area upon which it is advancing. In many cases these areas of decay progress very irregularly, and the figure becomes complicated and confused, especially in the later stages of the decay of a tree, so that dark lines extend very irregularly.

An examination of several maple trees bearing the *Polyporus igniarius* gave evidence that the peculiar discoloration of the wood accompanied the mycelium of this species of fungus, and might perhaps be sufficient to identify the species even where no fruit form of the fungus was present. An examination of the trunks of the beech bearing the *Polyporus igniarius* collected at Childwood, N. Y., in 1896, presented the same characteristic coloration

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and marking. The maple is said by some lumbermen to be troubled by a disease which they term "black heart." It would be interesting to know if the coloration produced in the heart by the action of the mycelium of *Polyporus igniarius* is identical with this "black heart" disease.

It now becomes a matter of interest to determine the mode of entrance of the mycelium of this fungus into the tree. The fruit bodies were found to be situated at wounds. These wounds, or places of exit for the fruit form of the fungus, were "knot" holes formed by the dying away of the lower limbs, and the failure of the healing tissue to close the wound thus formed. The fruit form can make its exit through quite a small opening, and usually does, growing to larger dimensions outside as it ages. The first year's growth of the fruit form may then be but a small protuberance from one to two centimeters in diameter and showing no fruiting surface. This often increases in size each year, slowly, until from four to five centimeters in diameter, when it may increase more rapidly and each year form a new fruiting surface beneath.

A young fruit form was found on a trunk of a maple ten centimeters in diameter. This was the only evidence that the tree was diseased, all the other wounds at fallen limbs having healed over. A section of the trunk showed that the heart rot had begun. It was in the first stages of the disease and confined to a limited area, —that directly at the centre of the heart. There was present here only the discolored area which is characteristic of the younger area in older stages of the disease, described above. It is quite likely that the fungus enters at these slow healing wounds where the lower limbs have fallen, and that in some cases the wounds might entirely heal over and imprison the mycelium before the fruit bodies had an opportunity to form. That there was abundant opportunity for the mycelium of the fungus to enter at these wounds is shown by the evidence of a large proportion of the young maple trees in the mixed forest at Clearwater.

I have already called attention to the deep shade in the spruce woods where the tall spruces overtop the broad-leaved trees, and of the effect which this shade has in checking foliage development on the younger maples. Even on the young and middle-aged maples there are comparatively few branches, and these near the

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top of the tree, the lower branches having died and dropped off. The same can be said of the beeches, birches, and other broad-leaved trees. Even on these topmost branches there are comparatively few leaves, because of the low light reaction. This means then that a comparatively small amount of the carbohydrates necessary in the formation of cell walls and woody tissue is manufactured. Consequently growth and the formation of wood goes on slowly. This interferes in a striking way with the healing processes needed to cover up the wounds caused by the falling limbs.

When there is an abundance of foliage and light, carbohydrates are formed in sufficient abundance to heal at a rapid rate. The healing tissue is firmer than the normal wood and working from within and close to the branch soon heals over and excludes the mycelium of the timber-destroying fungi. On the other hand, when there are few leaves and a small amount of starch is formed, the healing process goes on slowly, and before the opening caused by the falling limb can be closed, the portion of the branch exposed first undergoes weathering, and later the mycelium lays hold and enters, reaching the heart of the tree before the barrier of healing tissue is formed. From observations during several seasons it seems that this is a very common mode of entrance for the timber-destroying fungi in the broad-leaved trees.

A number of cases observed at Clearwater offer striking examples of the slowness with which the healing process goes on at branch wounds. The healing tissue formed slowly and did not close up against the base of the branch because of the small percentage of newly formed plant substance. Then for a series of years the healing would cease and an area around the knot would die back. Then for another series of years the healing would begin and advance over a portion of this dead area, when another period would intervene during which a still greater area would die back. In this way large and ugly open ulcers are formed, in which the wood within is exposed. This condition I have seen in young maples. On a number of them there were no fungus fruit bodies, but a section of the trunk showed all the characters of the heart rot caused by the mycelium of *Polyporus igniarius*.

The *Polyporus igniarius* has been known for a long time to in-

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habit fruit trees, especially the apple, peach, etc., under certain conditions. During August, 1900, I observed an apple tree by the roadside a few miles south of Cortland, N. Y., with fruit bodies of this polyporus on it. A number of years ago the tree had been pruned, by cutting several large limbs near the trunk, and others out some distance from the trunk. The tree was probably diseased at that time and perhaps these limbs were dead or dying. This may have led to their amputation.

In all cases the fruit bodies of the fungus were formed at these cut surfaces, there being no other place of exit. The tree was probably seriously wounded when young, and the mycelium entering had spread all through the heart of the trunk and branches, but was unable to form the fruit bodies until the larger limbs were pruned.

Several of the branches of this apple tree, bearing fruit bodies, were taken for examination. The character of the heart rot is in all essential respects the same as those observed in the maple and beech.

Trametes abietis.

This plant is common on spruces and balsams. It is a shelving form, and much smaller than the species of polyporus just described. The caps stand out from the wood from two to five centimeters, are somewhat triangular in side view, and broader than long. The base is usually spread out where it is attached to the tree, and often the entire plant is spread over the surface of the wood. In the latter case no shelf form is developed. The upper surface of the shelf is marked by concentric furrows and ridges, and is more or less velvety or hairy. When young the fruit bodies are tawny in color, but in age they become a darker brown, especially above, while the fruiting surface is a yellowish brown.

Trametes abietis on the Red Spruce. An interesting example of a red spruce (*Picea rubra*) was examined during September, 1898, in the Adirondack mountains. This was near Nehasena, Herkimer County, on the tract owned by Dr. Seward Webb. Through the courtesy of Prof. C. S. Graves, who then had the supervision of the forestry operations on this tract, I had the privilege of following the lumbermen for two days to inspect

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trees, or portions of trees, which were discarded after they had been felled.

In this particular case the entire tree had been discarded, although two logs had been cut from the trunk. On approaching the tree I first came upon the stump, and searched here for some evidence of the reason for rejecting the timber. Near the periphery of the stump, in the older sapwood near its junction with the heartwood, was a crescent shaped area in cross section about three centimeters broad and fifteen centimeters long. This was distinctly marked off from the surrounding portion by the coarser fractures of the wood from the crosscut saw used in felling the tree. This indicated that the wood was here slightly "dozed." The remainder of the stump was sound. This small area, showing such a slight alteration in the wood, probably would not have been considered objectionable.

On examining the cut made for the first log, sixteen feet above, the entire heart proved to be badly decayed. A large part of the sapwood was also invaded, and the cambium was being encroached upon. There remained only a thin shell of living and unaffected tissue underneath the bark. The heartwood was so soft that the fracture from the saw teeth was irregular, roughly cut and partially "ironed" down by friction from the saw blade. Still another log above this one had been cut off by the woodmen in the hope that the heart would be sound, and that a good log could be obtained near the top. This cut, however, presented a condition similar to the first one, — the heartwood and sapwood were badly decayed. This condition was sufficient to cause the abandonment of the entire tree. There were no evidences, on the trunk below the branches, of the fruit bodies of any fungus, nor of any injury which might have afforded an entrance for the fungus. The cut ends of timber were so badly roughed up by the saw that no structural characters in the diseased timber, which might aid in the determination of the species of fungus, could be seen. The next step was to determine the fungus and the place where it entered the tree.

Since the decay at the stump was so slight, and the diseased area so small in comparison with the extensive injuries farther up in the trunk, it was quite evident that the fungus had not entered

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from below. Upon searching in the top of the fallen tree, it was found that the "leader" of the tree, when about five centimeters (two inches) in diameter, had been broken off, possibly by a falling tree thirty or forty years ago. This leader, as a dead, decorticated object still projected from fifteen to twenty centimeters, above the point where the healing process was going on. One of the upper branches at this point had become the leader.

This old fracture of the main trunk, years ago, very probably provided an opportunity for the entrance of the fungus. Most conifers are provided with a quantity of free resin in the young branches or shoots, or the growing portion of the trunk. As is well known this resin flows freely from fresh wounds, and often continues for some time from old ones. The presence of this resin, and its free exudation from wounds, is nature's most effective method of blocking the way to the entrance of timber-destroying fungi in the conifers. When the wound is small, or the broken branch or shoot is young, the amount of resin forms an effectual barrier against the entrance of this class of fungi. Where the wound is larger, or the shoot is older, the process of healing over requires many years, and the older portions of the wood do not yield so great an amount of free resin.

The broken shoot in this example was five centimeters (two inches) in diameter. Healing began from twenty to thirty centimeters below the broken end. After thirty or forty years the dead prong still projected from fifteen to twenty centimeters above the healing surface, and probably never would have healed over. During this long time the fungus mycelium had an opportunity to enter, travel down the heartwood of the trunk and reach the butt. It is interesting to observe that while the fungus mycelium gained entrance through the broken area of the leader in the top of the tree, and traveled downward, the greater injury to the trunk was some distance below. This is probably due to the greater amount of free resin in the younger portion of the trunk above. While the mycelium traveled downward through this, it did not spread rapidly here nor bring about such a complete disintegration of the tissue. Sections of the trunk just below the point where the fungus entered, and for some distance below, show that the heartwood is firmer and harder, though invaded by the mycelium. The wood

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is also very much stained, brown irregular areas being often marked off by black lines or divided up into smaller areas by black lines. The mycelium also traveled upward in the newly established leader of the tree. From the trunk it had invaded many of the branches in the same way. As is usual in such cases a number of the branches had been killed. These dead branches then yielded readily to the disintegrating action of the fungus.

On a few of the limbs fruit bodies of *Trametes abietis* were found. A branch bearing a fruit body and broken at this point shows the gross structural characters of the wood affected by the mycelium of this species. At one stage in the decay of the wood there are numerous areas in which the process of disintegration is localized, or where it proceeds much more rapidly than in the surrounding wood. These isolated centres are quite evenly distributed. The wood is broken down completely and largely consumed, leaving a partial skeleton, or nearly all of it having disappeared. The remnant, as well as a thin layer of the bordering tissue, is bleached and white. It is thus in strong contrast with the reddish color of the surrounding wood where the decay has been checked, or has proceeded more slowly. This rapid local disintegration, then, forms numerous small "pockets" distributed through the affected wood at a certain stage in the progress of the disease. They are plainly visible because of the bleached tissue.

These pockets are a characteristic feature in one stage of the heart rot of the spruce from the mycelium of *Trametes abietis*. If they are found in the heartwood of the trunk of this individual spruce it would be quite conclusive evidence that the heart rot here was caused by this fungus and that the infection having occurred at the broken trunk in the top of the tree many years ago had gradually spread down the trunk to the base and out into numerous branches, some of which have been killed as a result. Sections of the trunk of this tree were cut out at different places and shipped to Ithaca for study.

On splitting sections of the trunk, cut from the discarded logs, these characteristic pockets were found to be present. They occur in the portions of the trunk where decay has made considerable progress, the entire heart being invaded, and the fungus encroach-

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ing on the sapwood. When cut with the crosscut saw, or even with a finer saw, the ends of the blocks do not show the pockets, since the soft wood is so readily fractured by the teeth of the saw. But when the end of a block is planed off smooth the pockets in transection are quite distinctly brought to view. From a side and end view the pockets are seen to be oblong in side view and cylindrical in cross section. They are from two to three millimeters broad and from four to six millimeters long. In the younger portions of the trunk, some distance above where logs were cut, and below the point of entrance of the fungus, and thus nearer it, the pockets were not yet formed. This is probably due to the fact that while the mycelium first penetrated the heartwood here, the latter being younger was more resistant and the process of disintegration proceeded less rapidly. The pockets appearing on certain of the branches is accounted for by the fact that these branches had been killed for some time, and were consequently in a less resistant condition.

The formation of pockets by the rapid disintegration of the tissues at many centres recalls the "peckiness" of cypress wood caused by the mycelium of a fungus yet unknown. The pockets in the cypress wood are much larger, however, and the structural character of the affected wood is quite different. In the case of the cypress trunks affected with this disease known as "peckiness," it is believed that the fungus, while developing at the centres, excretes an enzyme, or "ferment," which permeates the surrounding wood and acts as an antiseptic which prevents the further disintegration. It is possible that this is to some extent the case in the formation of the pockets in the spruce timber; that is, that the wood intervening between the centre of rapid disintegration, becomes permeated with an enzyme excreted by the mycelium which renders it immune for a time, or at least retards the disintegration of the wood. But if this is the case, the effect of the antiseptic is not lasting. In the case of fallen logs affected by the *Trametes abietis* the decay continues until all parts of the wood are in a much decayed condition. Still, in such logs, it is quite evident that the progress of the disintegration has been intermittent, certain centres having first decayed, and in time spreading from these pockets to surrounding areas until all the

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wood is brought under complete contribution to the mycelium. In such decayed spruce wood, there are farther evidences that the decay has spread from numerous centres which have been extended until they finally meet. This is shown in the varying coloration of the wood, and especially by black boundary or limiting lines.

Rhizoctonia.

There is a class of root and stem diseases which has been more or less obscure because the fungus concerned is not known in the fruiting condition, or, if so, only in a few instances. Since considerable information has been gained during the last few years in identifying the mycelium, and in separating it from well known fungi causing similar diseases, it may not be out of place to speak briefly of them here. There is an additional reason for speaking of them because the fungus is known to damp off a number of different kinds of seedling forest trees, and even in some places to climb and grow over the surface of the branches of mature pear trees.

I first observed the fungus in Alabama while studying the diseases of cotton. Here it was observed attacking seedlings, damping them off, or producing ulcers at the ground level, called by the planters "sore shin," and thought by them to be wounds caused by contact of the shovels used in cultivation. Later, in 1895, at Ithaca, N. Y., I found it a common cause of damping off of seedlings, especially of lettuce, radishes, and often of cabbages, egg plants, etc.

In a number of cases where these seedlings have been grown under conditions favorable for damping off, this *Rhizoctonia* has always occurred on them, while cucumbers, cress, sunflowers, etc., grown under the same conditions and in the same soil were affected with the well known damping off fungus, *Pythium debaryanum*. This is of interest not only in demonstrating that a large percentage of damping off of seedlings, generally attributed to the *Pythium debaryanum*, is caused by this sterile fungus, *Rhizoctonia*, but also in affording an example of selection of food on the part of different fungi in producing a similar disease.

While there is no fruit form by which we can identify this fungus, there are certain characters of the mycelium by which one

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can quite certainly recognize it. The mycelium is branched and septate, that is, divided into cells which are several times longer than broad, and are thus cylindrical. Wherever a branch arises from the mycelium the position of the first septum, or wall, in the branch is at some distance from the parent thread, and this small section of the branch is clavate in form. This is one of the important characters which aid us in identifying the mycelium of this sterile fungus.

In later stages of its growth the mycelium tends to form cords on *rhizomorphs*, by the union into a strand of a number of mycelium threads. These strands in years become brownish in color. There are also formed on these strands rounded enlargements about the size of a radish seed or bird shot. These are known as *sclerotia*. These are also brownish in color, though at first white and fluffy. On the surface of these *sclerotia* are very loose threads, and these are very characteristic in form. They are broader than the threads of mycelium, the cells are shorter, and strongly constricted at the walls, so that the threads are of a moniliform, or beaded, appearance. While these chains of elliptical or barrel shaped cells are not spores, they often separate, two or three remaining joined together, and may then function as spores. So in this way, while the fruit form, with spores, is unknown, bodies are formed which function as spores, and the *sclerotia* probably are a resting stage to tide the fungus over unfavorable periods.

Aside from diseases in the nature of damping off of seedlings, some serious diseases of older plants have been traced to the action of *Rhizoctonia*, especially of the beet and potato. In the case of the beet, (see Cornell University Bulletin 186), the fungus obtains a hold at the bases of the leaves. The leaf bases become blackened, and this is followed by the withering of the leaves. Then the fungus works into the crown of the beet, producing a browning of the tissues here, and later, cracks appear. The disease breaks out at isolated points in the beet field and spreads radially from these centres. This disease is best known in New York state. It has been found in Ohio, also in Iowa. It probably has a very wide distribution in this country, though it appears to be different from the *Rhizoctonia* disease of the beet in Europe.

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In Europe a *Rhizoctonia* disease of the potato has long been known. During the summer and autumn *Rhizoctonia* has been found on the stems and tubers of potatoes in New York. (See Cornell University Bulletin 186.) Examination shows that it is very common on the tubers; at least it was during the autumn of 1900. The infected plants sometimes are covered with the *sclerotia*.

It is evident from these, and similar studies, that there is no cure for the diseases caused by wound parasites after once the fungus has entered through the wound into the interior of the tree. For a few years there may be no apparent injury but with the lapse of time the tree becomes badly injured if not destroyed. The trees may live for years, or even a century or more, with the fungus inside, still growing. They may be so weakened that they are broken down or uprooted during strong winds. Shade trees may be rendered unsightly, and lacking in density of foliage. Fruit trees may be rendered less fruitful, if not ultimately killed. Timber trees in a very few years may be so injured as to be worthless for the market.

In their relation to forestry these studies emphasize the desirability of careful and economical methods in the felling of timber to protect the young stand from injury, in the supply of light to the forest floor, and in the protection from fire. For while many forest fires may not be so severe as to kill the trees outright the fire often scorches exposed roots, or the base of trunks, where the leaves are thick, or by a dead and dry log or stump, thus affording an entrance for these wound parasites.

In the handling of fruit and shade trees there should be the greatest care from the nursery stock to the fruiting tree, to prevent wounds. In pruning operations especially should there be care in pruning smooth and close to the trunk, followed by the use of some antiseptic wash or paint. Perhaps no better example of the good effects of proper pruning of shade trees can be seen than in the suburbs and vicinity of this city of Boston. But all through the land there are still numerous examples of careless and ignorant methods which should be speedily consigned to the past.

The lecture was illustrated by stereopticon pictures which added much to its interest and value.

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MEETING FOR LECTURE AND DISCUSSION.

SATURDAY, March 23, 1901.

A meeting for Lecture and Discussion was holden today at eleven o'clock, the President, O. B. HADWEN, in the chair.

The following lecture was delivered:

TWENTY YEARS' EXPERIENCE IN PEACH GROWING.

By JOHN W. CLARK, North Hadley.

The peach is a native of a warm climate. China and the United States are the only temperate climates where it comes to full perfection in the open air. Peach growing in the United States dates back nearly to the time of the first settlement, for, in 1633, we have account of peaches near Jamestown, Virginia, and peaches were the first commercial fruit grown in New Jersey. We also have accounts of fruit stones and kernels sent to Capt. John Endicott, Governor of Massachusetts Bay Colony, about 1629, among which were "Stones of all sorts of fruites, as peaches, plums, filberts, cherries," so we are safe in the conclusion that the peach was among the first fruits grown in this state.

Its cultivation however did not increase as rapidly in New England as it did further south, along the Delaware peninsula, where its growth was rapid,—so rapid in fact, that from this section the markets of the north and northeast have drawn the bulk of all their peaches until a very recent date. Up to about the year 1800 peaches flourished and orchards lived to a great age. There are accounts of old orchards throughout the peninsula, broken down and renewed perhaps a dozen times, that were healthy and bore good crops of fruit.

About the date given above (1800) a disease called the "yellows" appeared in the vicinity of Philadelphia, from where it spread north, south, east, and west, until it covered the whole peach area east of the Mississippi.

It is asserted that the yellows was not known in Massachusetts prior to 1837 and peaches were grown in the eastern part of the

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state well into the fifties. After this the yellows became so destructive that the growing of peaches was practically given up for a time in this state. I can remember the old peach trees that grew back of my home in my childhood. This must have been toward the end of the fifties. After these old trees died out, the new ones planted were short-lived and I remember only two or three seasons when we had peaches, until the orchard that I planted in 1878 bore its first crop, in 1883, of about two thousand baskets. This, as far as I have been able to learn, was the first commercial crop of peaches of any considerable size ever grown in western Massachusetts, and it is from the impetus this modest crop of peaches, grown on Mount Warner, in North Hadley, in 1883, gave to the long discarded peach, that the revival of peach growing in Massachusetts dates. Connecticut which boasted a four million basket crop of peaches the past season, took her start from this same crop of fruit.

Whether the disease known as the yellows is contagious or not I will not pretend to say; but from its history and the way it acts I am strongly inclined to believe that it is. I think we have yet to learn just what it is and how it spreads. But one thing is plain to all successful peach growers: that when a peach tree ripens its fruit prematurely, the fruit being of a much higher color than healthy fruit of the same variety, and having a flat or bitter taste, the sooner all such trees are dug out by the roots and burned the better it will be for the owner. A tree in this condition can never be made to produce profitable crops of fruit. A new tree can be planted and brought to bearing age cheaper than a diseased tree can be nursed to a convalescent uselessness.

The best location for a peach orchard is on high ground above that of the surrounding country and having a good circulation of air. To show the importance of a high location let me state that in my orchard during the winter of 1898 — '99 the thermometer registered twenty degrees below zero on the morning of December 14th. At the foot of the orchard three-fourths of the peach buds were killed. Halfway up the hill fully one-half of the buds were alive, while at the top three-fourths of the buds were uninjured. The difference in temperature between the top and bottom of the

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orchard was four degrees, it being colder at the bottom. The difference in elevation was about two hundred feet. The peach buds today show nearly the same difference at the different elevations.

The soil best suited to the peach is a well-drained sandy loam. A heavy and wet clay is the least suited.

In making choice of varieties of peaches to plant in Massachusetts hardiness of tree and bud should take a prominent place. For commercial orchards the early ripening varieties should not be planted, as they will ripen at the same time that the markets are supplied with the best of southern fruit. Mountain Rose is the earliest variety I would advise planting. Of the older varieties, Crawford's Early and Crawford's Late and Oldmixon seem to be the best. Of the newer sorts Elberta and Champion stand well to the front. If Elberta proves hardy it will be a profitable peach to grow. Some markets call for yellow fruit, while others want white, and varieties should be selected according to the market to be supplied.

Before planting the trees the ground should be ploughed and fitted the same as for corn or potatoes. The best distance to plant peaches where they are planted alone is probably from fifteen to eighteen feet apart each way. This will give from one hundred and fifty-four to one hundred and eighty trees to the acre. It has been my practice to plant peaches with apples, setting three peaches to one apple. I know many object to this and perhaps with reason, but my chief object has ever been to get an apple orchard, peaches taking second place. Others may think that more can be made with peaches alone, but in my case the one crop sold in 1883, six years from planting, paid for the land and all the expenses of the orchard to that time; so that the apple orchard six years old cost me nothing. The peach orchard I now have, planted in the same way ten years ago, has given three good crops of peaches, and today gives promise of a better crop than it has ever borne. This does not prove to me that I made a very great mistake in setting peaches with apples; and if planting an apple orchard where the soil and location were suited to peaches I should set peaches between the apple trees as in the past.

Peach trees should be pruned to a straight stem about two and

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one-half feet high when planting, and by annual pruning kept moderately low in order to lessen the expense in thinning, gathering the fruit, and pruning the trees. The whole surface of the ground should be kept cultivated from early spring to midsummer, from the time the trees are planted until the orchard is given up, for if there is one fruit which needs thorough cultivation it is the peach. The trees should be thoroughly examined for borers in early summer and late fall. When there is danger of mice gnawing the trees in winter, I know of no better way to protect the trees than to bank with earth, removing it as soon as it can be done in the spring.

Where the soil is of average fertility and the surface is kept thoroughly cultivated, little, if any, fertilizer will be needed until the trees begin to bear, unless it seems advisable to sow a little on the surface of the ground near the trees at the time of planting. The best fertilizer for the peach, and in fact for all of our fruits, is potash and phosphoric acid, to which may be added a little nitrate of soda, if the trees are not making enough wood growth, but this should be used with care. When the trees are old enough to bear and there is promise of a crop of peaches, a liberal dressing of the fertilizers named should be applied early in spring and sown broadcast over the whole surface, using one thousand lbs. of fine ground bone or South Carolina rock phosphate and five hundred lbs. high grade sulphate of potash to the acre.

The fruit should be thinned as soon as the June drop is over leaving the fruit three or four inches apart, removing all small and imperfect specimens. Thinning increases the size of the fruit to such an extent that the yield is not materially lessened, if at all; and it also increases the price at which the fruit sells. The drain on the tree will be much less when seventy-five peaches fill a half-bushel basket than when it requires one hundred and fifty, and the price at which the larger fruit sells will be nearly double that of the smaller.

If spraying is practised in a proper manner good results will follow; but if done in a careless way injury will result from it. When spraying peaches only the lime and sulphate of copper mixture should be used, as there is no need of Paris green or

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other poisons on the peach. The solution should not be stronger than four pounds of sulphate of copper, and five pounds of lime to fifty gallons of water. Spraying just before the buds open, then after the fruit has set, and again in two or three weeks will prevent spotting and cracking of the fruit and make it much larger. If the season is unusually favorable to fungus growth it may be advisable to spray again.

Varieties of the peach vary greatly in their ability to withstand extreme cold and many claim that seedlings are more hardy than budded fruit. This statement is too general; at least this has been my experience, for with me different seedlings have varied in regard to hardiness as much as have the varieties of budded fruit and I think that a hundred different kinds of each taken at random would show about the same average in hardiness. Every budded variety was once a seedling and its hardiness today is the same as when first grown as a seedling, provided it is in as healthy a condition. It is also claimed that varieties having large flowers are more hardy than those having small flowers; this, I think, is not founded on fact. The Oldmixon, which has very small flowers, is one of the most hardy of our peaches.

Without taking the time to discuss the different theories given to explain why peach buds are killed, the one that in my opinion comes nearest to the real cause is this:— from the time the leaves of a tree drop in the fall until they start in spring there is more or less circulation of the sap contained within the cells of the buds going on and depending on the temperature. The sap contained in a tree during its dormant state is more dense and contains less water than when the tree is growing. Each liquid has its freezing point and such as contain water expand in freezing. The less dense the sap or the more water it contains the easier will it freeze solid; and the more dense the sap the more cold it will take to freeze it solid. In freezing solid the expansion of the sap ruptures the cell walls of the fruit buds and they are killed. The killing of the buds can be detected after a severe cold night in a very short time if the buds are taken into a warm room and thawed out. Within an hour's time the centre of the buds will show a discolored appearance and will turn brown in a few hours. If the sap in the cells does not expand enough to

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burst the walls or if the tissues are elastic enough to escape being ruptured, the bud is not injured. This, to me, is the most plausible explanation of peach buds being killed when the mercury is little, if any, below zero and of not being killed when the mercury drops to fifteen or twenty degrees below zero; and also why one variety will stand more cold without injury than another. It depends on the amount of water in the sap and elasticity of the cell walls.

From 1882, with the exception of four years, 1888-'92, I have kept a record of the temperature whenever the mercury went to zero, or below, and the condition of the peach buds at these dates. The results are shown in the following table:

Lowest Temperature of the Winter and Date when Buds were Injured.

Winter of	1882–'83; Jan. 23,	8° below.	Buds uninjured; good crop.
" "	1883–'84; Dec. 23,	23° "	Buds killed.
" "	1884–'85; Dec. 20,	18° "	" "
" "	1885–'86; Jan. 13,	14° "	" "
" "	1886–'87; Jan. 9,	22° "	All buds killed with exception of Oldmixon, and there were enough uninjured buds of this variety to give a full crop in the fall.
" "	1887–'88; Jan. 23,	22° "	All killed but Oldmixon.
" "	1892–'93; Jan. 17,	14° "	There was a good crop of fruit.
" "	1893–'94; Dec. 14,	14° "	All varieties except Crosby and Oldmixon badly injured, but these bore a good crop.
" "	1894–'95; Jan. 20,	12° "	A good crop of all kinds.
" "	1895–'96; Jan. 6,	14° "	All killed.
" "	1896–'97; Feb. 7,	17° "	All bore a good crop.
" "	1897–'98; Feb. 3,	22° "	Nearly all killed; small crop.
" "	1898–'99; Jan. 2,	25° "	Buds killed.
" "	1899–1900; Feb. 3,	14° "	One-third killed; good crop.
" "	1900–'01; Jan. 20,	14° "	One-half killed.

From this it will be seen that there were peaches when the thermometer registered 8, 22, 22, 14, 14, 12, 17, 22, 14 and 14 degrees below zero; and that the buds were killed when the thermometer went to 23, 18, 14, 14 and 25 degrees below zero.

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One is often asked if it is not after the buds have started in early spring that they are most liable to be injured by the cold. At the south this is probably the case, but in Massachusetts I think it is not, for as far as my experience goes I have never had the fruit buds injured after Feb. 22nd. The nearest I ever came to having them killed after this date was the morning of the 10th of last May, when the thermometer stood at 20°. Peach buds were showing pink with a few flowers just open, but no injury was done. It has always been the severe cold of winter between Dec. 20th and Feb. 22nd that has destroyed the peach buds in my orchard.

That peaches can be grown in this state is an established fact, but I do not think that it will ever become what is called a peach state. Our winters are too cold and it will be only those who have a good location on high ground suited to the peach, who have a natural love for trees and fruit, and who will not get discouraged and give up when the mercury drops to 20° or more below zero, destroying the crop year after year, that will make the growing of peaches profitable. As I look back to the time when I grew my first peaches I fail to remember one person in my locality, among the many who were induced to plant peach trees by my success, that has not made a failure of peach-growing; and of those who plant peaches in this state I doubt if one in ten will make it pay. I believe in growing peaches in Massachusetts myself but do not believe in it for the majority, and although I am ready to put money into it if I can look after the trees myself I would not risk one cent in peaches if another was to care for the orchard.

Discussion.

The lecturer did not think that Massachusetts would ever raise enough peaches to make it worth while to have a law in regard to yellows. They might have a law to prevent plum wart. Much of the unhealthy condition of peach trees is due to borers and poor culture. One well acquainted with the yellows can distinguish this disease from the effects of borers.

The Crawford's Late peach is too late for some localities in New England, but where it is not it is a most desirable kind.

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You want a good healthy growth of well ripened wood; if your trees go into the winter without having the wood ripened they will be more liable to be killed.

The lecturer thought ground South Carolina rock as good as ground bone. The experience of Dr. Fisher at Fitchburg, and the Agricultural College at Amherst is the same. Paris green is liable to injure the foliage; the foliage of the peach is very sensitive. As much harm as good has thus far been done by spraying peaches.

In Worcester it is reported that the buds are all killed. The lecturer thought there will be but a small crop this year.

Plant peaches on high land. They will not pay at the foot of a hill. Fifty years ago the State Board of Agriculture reported that peaches could not be grown as well as they were fifty years earlier.

People had called the lecturer foolish to plant peach trees, but while valuation generally has decreased, his land has increased fourfold. He thought our New England hills, fairly well situated, can be put to no better use than growing apples. It takes eight or ten years to get an apple orchard into bearing, and if you plant peach trees between the rows you can get a better start.

William C. Strong said he found the lecture very interesting and very instructive, but very discouraging. He has visited Mr. Thurlow's peach orchard and found his peaches as fine and luscious as any he ever tasted. He still believes we shall be able to raise fine peaches. Those raised in Massachusetts are better in quality than any brought into the state. At a meeting of the American Pomological Society two years ago he heard the statement that Mr. Morrill of Benton Harbor, Mich., got six thousand dollars for his crop of peaches when all others around him failed. He cultivated very thoroughly until the middle of August. He then sowed oats and allowed them to die down and cover the ground in winter. In the spring they were worked into the ground. The speaker said that he has great faith that some discovery will be made by which we may be able to grow peaches.

The lecturer said that the season at Mr. Morrill's was very unusual. He kept his orchard thoroughly cultivated; he went over it every other day. This retained the moisture of the ground, but it had nothing to do with the hardiness of the trees.

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Only men who have a good location and who are born with a love for the business will succeed.

B. W. Barnard, of Grand Rapids, Mich., said that he has an orchard in Michigan in the same latitude as Boston. He has one orchard of three thousand trees and one of four hundred. He cultivates early in the season and ceases in July. One orchard was not cultivated the previous year and the buds went into winter in good condition. In the spring he had a branch examined and found the wood cells about one-third destroyed. If early cultivation is looked after the trees will bear even though the mercury has been as low as thirty degrees below zero.

The lecturer said he had come to the same conclusion in regard to the wood cells, and was glad to hear the same view expressed by some one else. With a cover crop mice are very liable to injure the trees. He does not grow clover in his orchard when there is a crop of fruit, for the trees need all the moisture in the ground. In a season when the trees do not bear he would sow clover or some other crop. You don't want to stop cultivation too soon; if you ripen the wood too soon the buds will start into late growth. It is a delicate question just when to stop. Late summer is a safe time. Get the trees in good condition to go through the winter. Mr. Barnard said that eighteen degrees below zero will kill buds in Michigan.

A lady inquired about spraying with whitewash and the lecturer replied that it keeps the wood cold, which is desirable in the south, but not here. We want to keep it warm. He would plant on high ground where there is a good circulation of air. One year when the fall was warm the buds started. That year the buds were killed at six degrees below zero. Buds are not so likely to be injured when covered with frost.

Varnum Frost had seen hundreds and hundreds of acres set out with peach trees which have all been failures. Many have used spraying mixtures on part of an orchard and have been unable to see any difference. So much science has got into agriculture that it is extremely difficult to raise anything. When he was a boy peach trees were as healthy as forest trees. He thinks so many chemicals have been introduced into the soil that it is upset and discouraged.

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The President said he knew little about the yellows until 1840. Before that, peach trees might live to be fifty years old. In late years he has practised growing peaches from stones, getting the stones from a section where the yellows did not exist. Seedling trees would be no better than budded trees if the seed was unhealthy. Get stones from below Virginia or from California and you will have better success. He thinks that each fruit is endowed with a natural term of life, and if continued beyond that the trees are less healthy. The hardest work he ever had in farming was to sell his peach crop about 1850. He went into the market at eight in the morning and had to back up under a gas light till ten at night to sell a load. The lower rows in his orchard near a brook never bore fruit, while from those higher up there was a good crop. He agreed with the lecturer that raising peaches in Massachusetts is uncertain.

Samuel H. Warren said his father had a peach orchard which produced a good crop that sold at fair prices. One tree appeared to be a new early variety and he thought it would be a good plan to take scions from it. In a year or two the trees were all dead from the yellows.

Mr. Frost has a friend in Fitchburg who has a peach orchard of five thousand trees. He buys trees and sets them in grass land. Every fall he buys a hundred tons of hay and puts some around every tree. He winds tarred paper around the trunks to prevent the mice from gnawing and has never been troubled by them. He cuts the tops of trees off when he buys them and rubs off every eye except the low ones. He has his crop near the ground.

The lecturer said that cultivating and mulching amount to the same thing; he means shallow cultivation. Plough very shallow near the trees. Use a cutaway harrow if you begin early in the season. You may begin before the frost is out of the ground. The cutaway harrow does not work well on a hillside. With a spring tooth harrow you can keep the ground level.

Apple trees will do well in newly cleared land and peach trees also, only the work will be greater.

Jacob W. Manning said that in 1853 he gathered eight bushels of Crawford's Late peaches in Burlington and sold them in Boston for $32.00. Twenty thousand bushels were raised one year in Billerica but few were sold. The peach rot came in 1860.

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MEETING FOR LECTURE AND DISCUSSION.

SATURDAY, March 30, 1901.

A meeting for Lecture and Discussion was holden at eleven o'clock today, Vice-President BENJAMIN P. WARE presiding.

The Committee on Lectures and Publication regret that they are unable to present more than the following abstract, prepared by the author, of the lecture delivered.

INSECTS INJURIOUS TO FRUITS AND VEGETABLES.

BY PROFESSOR H. T. FERNALD, Agricultural College, Amherst.

The lecturer stated that destructive attacks by insects were nothing new, being graphically described in several places in the Bible. During the last century, however, the injuries caused by insects had become more frequent and serious, the reason for which was due to several causes, the first and probably the most important of these being the introduction of injurious forms from other countries. More than seventy of our worst pests of the present day have been introduced from abroad and it is a noticeable fact that their work in this country is more destructive than in their native land. Modern methods of agriculture are also responsible for a portion of the increased loss, the modern tendency to a concentration of crops being distinctly favorable to the rapid multiplication and spread of the insects which feed upon them, while, finally, the great reduction in numbers of our insectivorous birds has removed one of the most efficient means for holding destructive insects in check. He then went on to speak of the scale insects as affecting fruit trees in this country, illustrating his remarks with lantern slide views of the insects described. The oyster-shell scale was shown and its life history briefly sketched. The lecturer stated that it was introduced from Europe during the latter part of the 18th century and is now generally distributed over the country, and while not usually destroying fruit trees is nevertheless very injurious to them. The scurfy scale was also treated of in a similar manner and a

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slide showing where parasites had been at work destroying it was put upon the screen. The lecturer next took up the San José scale which, he stated, was by far the most serious scale with which we have to contend at the present time. He further said that it is in all probability a native of Japan and was first discovered in this country in California about 1870. Its life history was fully described and pictures showing its ravages were put upon the screen as was also a map of Massachusetts showing thirty-eight localities where the scale is now known to occur. The speaker stated that during the summer of 1900 he had received currants, pears, and apples so badly affected by this insect as to render them unsalable, these specimens all coming from places within fifty miles of Boston. The best treatment advisable for the oyster-shell and scurfy scales is to spray affected trees twice with kerosene emulsion or with a 10 per cent mechanical mixture of kerosene and water,—once about the 10th of June and again about the 25th of that month. For the San José scale, however, this treatment would be quite ineffective because of its different life history. For this insect the fumigation of all nursery stock before shipment was strongly urged and purchasers of fruit stock were advised to require a certificate of inspection and freedom from the scale with every lot bought, taking due care to note that the date of inspection is within a year of the date of purchase. Fumigation, however, was not recommended for general use because of its expense and the apparatus necessary, but whale-oil soap was suggested in its place, the most successful formula for its preparation being given. The speaker said that if the San José scale increased during the next ten years as rapidly as it had during the last five in this State, it would become a serious question whether any fruit at all could be raised in Massachusetts, and that if they wished to save their orchards the fruit growers of the State would find it necessary to give this insect much attention.

The lecturer then took up the asparagus beetle as an insect causing much trouble to market gardeners and sketched its life history and the best means for destroying it, for which purpose he recommended arsenate of lead. This was followed by a description of the cabbage worm which he said was, in spite of

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nearly fifty years' experience with it, one of the most difficult cabbage insects to control. For that purpose he recommended the use of Paris green, explaining why any danger in the use of this insecticide was more apparent than real and stating his experience in its use, and also the practice of the large market gardeners around Philadelphia where this treatment has been followed for fifteen years with excellent results. He closed by urging a more careful study of the insects injurious to crops, stating that the annual loss from this cause was over $300,000,000 each year in the United States and that only a small part of this loss is unavoidable.

The lecture was illustrated throughout by lantern slides.

Discussion.

Hon. Virgil C. Gilman asked whether scraping the bark of apple and peach trees on or before the first of June would destroy scales on the bark.

The lecturer said that the best time to scrape trees is during the winter but this is difficult and ineffectual. Spraying is cheaper and better. Scales on nursery stock and other young trees are found down to the ground, but as the bark grows thicker the old ones retreat.

The Chairman said that ten years ago the orange trees in California were infested with an injurious scale but a parasite has been introduced which has kept the scale in check.

The lecturer said that the scale on orange trees in California is not the San José but one that came from Australia. The San José scale multiplies more rapidly. The lady bird feeds on the San José scale and is a great help to orchard men, but we cannot hope that it will exterminate the San José scale because the latter increases so much more rapidly. The United States Department of Agriculture has sent an agent to Japan to learn what keeps this pernicious scale in check in that country. The tent caterpillar has been known for many years and has never been exterminated, but we have to fight it every year and we have learned that it can be kept down, and we must do the same with the San José scale. There is a possibility of controlling it, but not of exterminating it. The lecturer said that he was called upon to inspect a nursery

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in another state, and that he refused a certificate of freedom from the San José scale. The owner sighed and said that he would send the trees to Massachusetts, where there is no law to prevent the introduction of the San José scale.

Varnum Frost said that the experiment stations had cost a good deal of money, and asked if there had ever been an insect during the last hundred years which had destroyed a crop so that there was not enough left to supply the wants of the people. The cabbage worm is a recent introduction, but cabbages are grown in the suburbs of Boston as well as ever. He regarded injurious insects as beneficial by stirring up cultivators to attend to their crops.

The lecturer said that it was impossible to take up all sides of the question in the time allotted to him. Except for insects human life on the earth would be ended in five years. There are good insects and bad insects, as there are good people and bad people. He had not attempted to develop a scare, but had simply stated what had occurred in other states but had not reached Massachusetts because it is so far north. His work was that of forewarning, and the map shows that the pest has already come. It is the people who have it who are making the outcry. Mr. Frost's view in regard to the benefit of insects may be correct, but they are not an unmixed benefit.

The Chairman said that asparagus is fit to cut in forty-eight hours from the previous cutting so that the eggs of the asparagus beetle do not have time to hatch.

The lecturer said that the eggs mentioned require four or five days to hatch, and if the asparagus is cut clean every forty-eight hours there is not time for them to hatch. When cutting ceases and the seed stalks grow up the beetles have their opportunity. Every farmer seems to have some neighbor who is not a good farmer to propagate insects for him.

At the suggestion of the Chairman a vote of thanks to the lecturer was unanimously passed.

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EXPERIMENT STATION REPORTS WANTED.

The Massachusetts Horticultural Society is endeavoring to collect complete sets of the Bulletins and other publications of all the Agricultural Experiment Stations in the United States and Canada. Those named below are wanting, and any person having a spare copy will confer a favor by addressing the Librarian of the Society, Horticultural Hall, No. 300 Massachusetts Ave., Boston.

Alabama (Ag. and Mech. College Station).— Bulletins 4–6 (1884), 7–10 and 1–4 (1885), and 5–9 (1886). 7th Annual Report, for 1894, and 9th, for 1896.

Alabama (Canebrake Station).— All Bulletins later than 18, and all Annual Reports later than the 3d, for 1890.

Alabama (Tuskegee Station).—Bulletin 2.

Arizona. — 4th Annual Report, for 1893.

Arkansas.— Bulletin 1. All Annual Reports later than the 4th, for 1891, except the 8th, for 1895.

California — Bulletins 32, 1878, and 1, 2, 3, 5, and 50, New Series.

Colorado.— Bulletin 3.

Connecticut (New Haven Station).—Bulletins 1 to 67, inclusive. Annual Reports for 1877 and 1879 to 1883, inclusive.

Florida.— Annual Report for 1892.

Indiana.— (Purdue Univ. School of Ag.). — Bulletin 1. College Reports 1 to 14, inclusive.

Iowa.—Bulletins 54, 55 and 56. (The original bulletins.)

Kentucky.— Bulletin 10.

Michigan.— Special Bulletins 1, 3, and 5. 6th Annual Report, for 1892-93 (contained in Report of Michigan Board of Agriculture, 1893).

Missouri. — Bulletins 9, 13, 15, 16, 19, 20, 25, and 26 of Old Series. All Annual Reports since the 1st, for 1888, except those for 1896 to 1898, inclusive.

New Jersey.— Bulletins 1, 4, 5, 15, 27, and 28.

New Mexico.— Eighth College Catalogue, 1897–98.

New York (Cornell). — 1st Annual Report, 1881–82, and all between that and 1888, except the 2nd, for 1882-83 (Reports of Agricultural Department of Cornell University.)

North Carolina. — Bulletins 1 to 56, inclusive, and 69, 2d ed. 1st to 7th Biennial Reports. Meteorological Division, Bulletin 2 (86*b*). Special Bulletins 1 (77*a*) and 4 (82*a*). Weekly Weather Crop Bulletins 1–21, 1888; 1–24, 1889; 1–25, 1890; 2 and 4, 1891.

North Dakota.— 4th Annual Report, for 1893.

Ohio.— All Bulletins of First Series, except 16, 17, 18, and 19.

Oklahoma. — All Annual Reports previous to that for 1896–97, except that for 1893–94.

Pennsylvania. — Annual Reports for 1869, 1872, 1879–80, 1881, 1882, 1883, and 1884. [All issued by the State College.] Bulletin of Information No. 1.

South Carolina.— All Bulletins of the Old Series (previous to 1888) on the work of the Experimental Farm of the South Carolina College. 3d Annual Report, for 1890, and 6th, for 1893.

Texas.—College Bulletins 1–5, 1883–1887.

Virginia. — 10th Annual Report, for 1898-99.

Washington. — 6th, 7th, and 8th Annual Reports, for 1895–96, 1896–97, and 1897–98.

West Virginia.— Special Bulletin — Potash and Paying Crops, 1890.

Wyoming.—Bulletins 2 to 4, 9, and 10.

Ontario Department of Agriculture, Toronto.—Bureau of Industries. — Agricultural Returns to the Ontario Bureau of Industries, Nov. 1882 (5th), Aug. 1883 (7th), and Nov. 1887 (20th).

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TRANSACTIONS

OF THE

Massachusetts Horticultural Society

FOR THE YEAR 1901.

PART II.

BOSTON:
PRINTED FOR THE SOCIETY,
1902.

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TRANSACTIONS

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The New Horticultural Hall: Erected A. D. 1900.

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TRANSACTIONS

OF THE

Massachusetts Horticultural Society.

BUSINESS MEETING.

SATURDAY, April 6, 1901.

A duly notified stated meeting of the Society was holden at eleven o'clock today, the President, O. B. HADWEN, in the chair.

Ex-President William H. Spooner reported the following memorial of the late Augustus Parker, which was unanimously adopted:

Mr. Augustus Parker of Roxbury, a member of this Society, died on the 27th of February, at the age of seventy-four.

My first acquaintance with Mr. Parker was about the year 1856, when he was engaged in the coal business, but his predominating taste was for farming, for which he had an early training and to which he subsequently turned his entire attention.

His farm was a portion of the Seaver estate near Grove Hall, and he managed it skilfully, making its products desirable to many purchasers.

His grandfather, Hon. Nathaniel Seaver, with whom he lived from early childhood, brought scions of the Seckel pear from Washington (while a member of Congress) with which he grafted a tree standing on the old place on Blue Hill Avenue.

Mr. Parker continued farming until the growing demand on his lands for residential purposes induced him to sell.

He was much interested in local history and genealogical research.

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He became a member of the City Council of Boston in 1875, and was a member of the Board of Overseers of the Poor from 1878 to 1880.

He was elected a corporator of the Franklin Savings Bank in January, 1877; also a trustee and member of the Board of Investment, and later Vice-President, and succeeded Hon. F. W. Lincoln as President in February, 1898.

He was elected a member of this Society in 1849, and was a Vice-President in 1893, '94, '95, and '96.

The Committee on Lectures and Publication reported a deficiency of five dollars in the appropriation for their use, and asked for an additional appropriation of that amount, which was voted, subject to the approval of the Executive Committee.

The Secretary read a letter from the Secretary of the Society of American Florists, stating that one Silver and one Bronze Medal had been appropriated by that Society to be awarded through the Massachusetts Horticultural Society, at one of their regular public exhibitions, for new and meritorious plants of American origin, but only to such exhibits as are considered worthy of such an award.

The offer was accepted and the thanks of the Society were voted therefor and the communication was referred to the Committee on Prizes to be put in proper form.

Henry L. Clapp, Chairman of the Committee on School Gardens and Children's Herbariums, stated that that Committee were unable to attend to the work of awarding prizes for Native Plants, and offered the following vote:—

Voted, That the work of judging native plants and awarding prizes therefor be referred back to the Society for reassignment to some other Committee now existing, or to some committee who may be hereafter appointed.

H. L. Clapp, *for the Committee on School Gardens and Children's Herbariums.*

This vote was laid on the table, and the subject was referred to a Committee consisting of Mr. Clapp, Charles B. Travis, and Mrs. H. L. T. Wolcott to consider and report upon.

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The President reported the following recommendation from the Executive Committee, —

Recommendation to the Society,

Voted, That the consideration of the ultimate disposition of the statues now on the outside of the present building be postponed for the present, and that the removal of them and their temporary deposit be left to Mr. Wheelwright, the architect, and the Building Committee, with full powers.

This recommendation was adopted.

The following named persons, having been recommended by the Executive Committee for membership in the Society, were on ballot duly elected:

PETER FISHER, of Ellis,
MISS ABBY A. BRADLEY, of Hingham,
MISS MARY F. BARTLETT, of Boston.

On recommendation of the Executive Committee

GEORGE FRANCIS ATKINSON, Professor of Botany in Cornell University, Ithaca, N. Y., and
PROFESSOR L. WITTMACK, Secretary of the Royal Prussian Horticultural Society, Berlin, Prussia,

were elected Corresponding Members of the Society.

The meeting adjourned to Saturday, May 4, at such place as might be provided.

BUSINESS MEETING.

SATURDAY, May 4, 1901.

An adjourned meeting of the Society was holden today at eleven o'clock, at No. 227 Tremont Building, Boston, the President, O. B. HADWEN, in the chair.

The following vote offered by the Treasurer was passed:

Voted, That the rate of interest to be credited annually to the J. D. Williams French Fund, for the purchase of books for the Library, be at the rate of four per cent.

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A letter from William Wallace Lunt, Chairman of the Committee on Plants, resigning that position on account of business engagements, was read. It was voted that Mr. Lunt's resignation be accepted, with regret that he feels it necessary.

On motion of Ex-President William H. Spooner it was

Voted, That the Committee on Plants be authorized to recommend candidates to fill the vacancies in the Committee and in the Chairmanship.

The President, as Chairman of the Executive Committee, reported that that Committee had approved the appropriation of five dollars voted by the Society at the April meeting to cover the deficiency in the appropriation for the Committee on Lectures and Publication.

Henry L. Clapp, Chairman of the Committee to consider the subject of awarding prizes for native plants, made a report which was accepted, and on motion of William H. Spooner it was voted that Charles W. Jenks be a Committee to award prizes and gratuities for native plants with the liberty to call in the assistance of such experts as he may desire.

A letter was received from W. Prentiss Parker, acknowledging, in behalf of his mother and sisters, as well as himself, their grateful appreciation of the memorial of the late Augustus Parker adopted by the Society.

A circular was received from the President and Secretary of the American Pomological Society, with the information that the Twenty-Seventh Biennial Session of that Society will be held at Buffalo, N. Y., on the 12th and 13th of September, and inviting the attendance of delegates and the contribution of fruits to the exhibition, and additions to the membership of the Society.

A letter was received from George Francis Atkinson, Professor of Botany in Cornell University, Ithaca, N. Y., acknowledging receipt of the information of his election as Corresponding Member of this Society, and expressing his appreciation of the honor conferred upon him.

The following named persons, having been recommended by the Executive Committee for membership in the Society, were on ballot duly elected:

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THOMAS E. PROCTOR, of Boston,
MISS MARY D. BATES, of Ipswich,
MRS. AUGUSTUS P. GARDNER, of Hamilton.

Adjourned to Saturday, June 1.

BUSINESS MEETING.

SATURDAY, June 1, 1901.

The meeting of the Society on the 4th of May adjourned to today, but there was no quorum present and the meeting was dissolved.

BUSINESS MEETING.

SATURDAY, July 6, 1901.

A duly notified stated meeting of the Society was holden at eleven o'clock today, the President, O. B. HADWEN, in the chair.

A report was received from the Committee on Plants, nominating Arthur H. Fewkes for Chairman, and Robert Melrose Grey to fill the vacancy on the Committee, and these gentlemen were unanimously elected.

The Secretary announced the receipt of a letter from Professor L. Wittmack, Secretary of the Royal Prussian Horticultural Society, Berlin, acknowledging his election as a Corresponding Member of this Society, and thanking the Society therefor; also a letter from Ralph D. Cleveland of Hinsdale, Illinois, acknowledging with thanks the expression by the Society of respect and esteem for his father, the late H. W. S. Cleveland.

The question of holding or omitting the weekly summer exhibitions of the Society was brought up, and after full discussion it

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was voted to omit all exhibitions until the Annual Plant and Flower Show on the 4th and 5th of September.

On motion of Henry L. Clapp it was unanimously voted that this Society endorse the object of the Society for the Protection of Native Plants.

William C. Strong stated the arrangements made for the meeting of the American Pomological Society at Buffalo, N. Y., on the 12th and 13th of September, and urged the attendance of as many members as could make it practicable to visit that and the Pan-American Exposition. It was voted that the Secretary receive the names of such members as would attend as delegates, and that he also notify members of the opportunity.

Joseph H. Woodford, from the Committee to prepare a memorial of the late Edwin C. Lewis of Taunton, made a report which was unanimously accepted, and it was voted that it be entered on the records of the Society, and that a copy be sent to the family of Mr. Lewis.

The following is the memorial :—

Whereas, we have learned with great sorrow that our friend and fellow member of our Society, Edwin C. Lewis of Taunton, has been taken away from us by death, we desire to record our deep sense of the loss we have sustained; therefore be it resolved, that in his decease we recognize the passing away of a man of admirable character, whose nature was strongly marked by the qualities of earnestness, sincerity, good faith to his employer, kindliness of soul and geniality of disposition; and be it further resolved, that in his long and successful career as a tiller of the soil he always illustrated the best type of a gardener and farmer, and that the example which he has set of fidelity to his calling is one we may desire to emulate; and be it further resolved, that our heartfelt sympathy be extended to his family and friends, and that a copy of these resolutions be spread on the records of our Society, and be transmitted to his bereaved family.

WARREN H. HEUSTIS,
PATRICK NORTON,
J. H. WOODFORD. } *Committee.*

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The following named persons, having been recommended by the Executive Committee for membership in the Society, were on ballot duly elected:

ALBERT L. MURDOCK, of Boston,
LORING UNDERWOOD, of Belmont,
SYLVESTER TOWER, of Boston,
MISS C. M. WALKER, of Boston,
JOSIAH B. SHURTLEFF, JR., of Revere,
MRS. HELEN M. TOWER, of Cambridge,
ALFRED RICHARD CROSS, of Nantasket.

Adjourned to Saturday, August 3.

BUSINESS MEETING.

SATURDAY, August 3, 1901.

An adjourned meeting of the Society was holden today at eleven o'clock, the President, O. B. HADWEN, in the chair.

Agreeably to the Constitution and By-Laws the President appointed the following named members a Committee to nominate candidates for Officers and Standing Committees for the year 1902:

WILLIAM C. STRONG, *Chairman*,

WILLIAM H. SPOONER,	PATRICK NORTON,
FRANCIS H. APPLETON,	BENJAMIN C. CLARK,
BENJAMIN P. WARE,	MRS. E. M. GILL.

The Secretary read a letter from N. L. Britton, Ph. D., Chairman of the Council of the Horticultural Society of New York, inviting this Society to participate in an International Conference on Plant Breeding and Hybridization during the year 1902, probably during the month of September. It was voted to accept the invitation.

The Secretary also read a letter from Mrs. Jane Lewis, thanking the Society, on behalf of herself and her family, for its expression of sympathy in the loss of her husband, the late Edwin C. Lewis.

Adjourned to Saturday, September 7.

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BUSINESS MEETING.

SATURDAY, September 7, 1901.

An adjourned meeting of the Society was holden at eleven o'clock today. In the absence of the President and all the Vice-Presidents, Ex-President SPOONER was called to the chair.

Ex-President William C. Strong, Chairman of the Committee to nominate candidates for Officers and Standing Committees of the Society for the year 1902, reported a printed list, which was accepted. The Committee was continued and requested to nominate candidates in place of any who might decline before the election.

Mr. Strong also reported the following list of delegates to the Twenty-Seventh Biennial Session of the American Pomological Society, to be held in Buffalo, N. Y., September 12th and 13th:

The President, O. B. HADWEN, *Chairman*,

WILLIAM C. STRONG,	WILLIAM H. SPOONER,
BENJAMIN P. WARE,	WARREN FENNO,
JAMES H. CLAPP,	J. WILLARD HILL,
JACOB W. MANNING,	JOHN L. BIRD,
THOMAS C. THURLOW,	FREDERICK W. DAMON,
EDWARD B. WILDER,	CHARLES B. TRAVIS,
AARON LOW,	JAMES H. BOWDITCH,
PATRICK NORTON,	HENRY W. WILSON,
E. W. WOOD,	ARTHUR H. FEWKES.
CHARLES F. CURTIS,	

The report was accepted and it was voted that the Secretary be authorized to add to the list the names of any other members who would like to go as delegates.

After considerable discussion as to whether the new building would be accepted by the Society in time to hold the Annual Election, which occurs on the 5th of October, it was

Voted, That the Treasurer shall have full power, in case the new hall in not in readiness to hold the Annual Election, to provide another suitable place to hold the election.

It was also *Voted*, That the Superintendent of the Building and the Librarian be instructed not to remove any of the personal

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property of the Society into the new building until they have received written instruction to do so from the Building Committee.

The meeting then adjourned to Saturday, the 14th instant.

BUSINESS MEETING.

SATURDAY, September 14, 1901.

An adjourned meeting of the Society was holden today at eleven o'clock, the President, O. B. HADWEN, in the chair.

Certain legal questions connected with the care and drainage of the alleyway between the land of the Society on Huntington Avenue and that of the Proprietors of Chickering Hall, were brought before the meeting and it was

Voted, That when the Society adjourns it be to Saturday next, the twenty-first instant, at eleven o'clock, for the consideration and decision of these questions, and that notice be given by postal card to every member of the Society of the meeting and its purpose.

It was also *Voted*, That the Building Committee be requested to present their report at the meeting on Saturday next, and that the subject of the acceptance of the new building be then acted upon.

Ex-President Francis H. Appleton was appointed a Committee to prepare a memorial of the late George A. Nickerson.

The meeting then adjourned to Saturday, September 21, at eleven o'clock.

BUSINESS MEETING.

SATURDAY, September 21, 1901.

An adjourned meeting of the Society was holden today at eleven o'clock. Notice of the meeting had been giving by mailing a postal card to every member. The chair was occupied by the President, O. B. HADWEN.

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Francis H. Appleton, Chairman of the Building Committee, read the draft of an agreement between the Society, and William H. Hill, R. Stuart Chase, and Charles H. W. Foster, Trustees under the will of William H. Hill, and offered the following vote:

Voted, To authorize the Treasurer of the Massachusetts Horticultural Society to execute in the name of the Society an agreement between it and William H. Hill, R. Stuart Chase, and Charles H. W. Foster, Trustees under the will of William H. Hill, in regard to the use and maintenance of the passageway created for the benefit of the estates of the two parties to the agreement and to cause the corporate seal of the Society to be affixed thereto.

The passage of this vote was moved by Ex-President William C. Strong, and seconded by William H. Spooner, and after full consideration it was passed by a unanimous vote in the affirmative.

The Chairman of the Building Committee then read the report of that Committee, and presented the following vote and moved its passage:

Voted, That the Society accepts the new building on Massachusetts Avenue, with the provision that the contractor shall not be given formal acceptance until the Society's interests can be fully protected.

This motion was seconded by William H. Spooner and discussed by Mr. Strong, Mr. Spooner, and the President of the Society, inquiries being answered by the Chairman of the Building Committee, and carried in the affirmative.

The meeting was then dissolved.

BUSINESS MEETING.

SATURDAY, October 5, 1901.

A Stated Meeting of the Society, being the Annual Meeting for the choice of Officers and Standing Committees, was held * at eleven o'clock today, the President, O. B. HADWEN, in the chair.

The Secretary stated that the notice of this meeting required by the Constitution and By-Laws had been duly given.

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* At Wesleyan Hall, Bromfield Street.—Ed.

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On motion of Edwin H. Jose, duly seconded, it was voted that the Report of the Committee on the Revision of the Constitution and By-Laws, presented at the Stated Meeting on the fifth of January and then postponed to this meeting, be taken up.

Theodore H. Tyndale moved that the Committee on the Revision of the Constitution and By-Laws be discharged, and that the consideration of their Report be indefinitely postponed. This motion was duly seconded and carried.

Joseph H. Woodford moved the reconsideration of the last vote. This motion was duly seconded and reconsideration was refused.

The President here retired and called to the chair Vice-President Benjamin P. Ware.

Ex-President William C. Strong reported from the Executive Committee a recommendation that the opening of the New Hall be celebrated by an address or addresses during the coming Chrysanthemum Show. The report was accepted, and the President and Ex-Presidents Strong and Spooner were appointed a Committee to make arrangements for the celebration.

The President, as Chairman of the Executive Committee, presented a report from that Committee, recommending the appropriation of $6,000 to cover the deficiency in the amount previously appropriated for the Building Committee. This appropriation was voted.

Agreeably to the Constitution and By-Laws the Chair appointed Hon. Aaron Low, Charles W. Jenks, and Edwin A. Hall, a Committee to receive, assort and count the votes given for Officers and Standing Committees for the year 1902, and report the number. The polls were opened at a quarter past eleven o'clock.

Charles E. Richardson, Treasurer, moved the following vote:

Voted, That the Treasurer be, and he hereby is, authorized to execute, in the name of the Massachusetts Horticultural Society, an agreement between it and William H. Hill, R. Stuart Chase and Charles H. W. Foster, Trustees under the will of William H. Hill, in regard to the use and maintenance of the passageway created for the benefit of the two parties to this agreement, and to cause the corporate seal of the Society to be affixed thereto.

The vote was passed in the affirmative.

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The following named persons, having been recommended by the Executive Committee for membership in the Society, were on ballot duly elected:

HENRY BIGELOW WILLIAMS, of Boston,
MISS ELLA F. HILDRETH, of Lowell,
MISS MARY ALMA COE, of Boston.

The polls were closed at quarter past one o'clock, and the Committee to receive, assort and count the votes given, and report their number, reported that the whole number of ballots cast was ninety-one, and that the persons named on the ticket presented by the Nominating Committee had a plurality of votes and were elected, except that Arthur F. Estabrook was elected a member of the Finance Committee in place of Charles S. Sargent.

The report was accepted, and the persons reported by the Committee as elected were, agreeably to the Constitution and By-Laws, declared by the presiding officer to have a plurality of votes, and to be elected Officers and Standing Committees of the Society for the year 1902.

Adjourned to Saturday, November 2.

BUSINESS MEETING.

SATURDAY, November 2, 1901.

An adjourned meeting of the Society was holden at eleven o'clock today, the President, O. B. HADWEN, in the chair.

The President, as Chairman of the Executive Committee, reported from that Committee a recommendation that the Society appropriate the following named sums for Prizes for the year 1902:

For Plants	$1,750.00
" Flowers	2,187.00
" Native Plants	153.00
" Fruits	1,487.00
" Vegetables	1,050.00
" Gardens	438.00
Total	$7,065.00

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These amounts being twelve and one-half per cent less * than those appropriated for the year 1901.

The President further reported from the same Committee a recommendation that the Society appropriate $250 for the Committee on Lectures and Publication for the year 1902, this sum to include the income of $50 from the John Lewis Russell Fund.

The report was accepted, and, agreeably to the Constitution and By-Laws, laid over until the Stated Meeting on the first Saturday in January.

It was voted that any further furnishing of the Library Room, with either bookcases or other furniture, be entrusted to the Library Committee.

On motion of Ex-President William H. Spooner it was voted that the Building Committee be requested to furnish a detailed statement of the cost of the new building.

GRENVILLE T. W. BRAMAN of North Cohasset, having been recommended by the Executive Committee for membership in the Society, was on ballot duly elected.

Adjourned to Saturday, December 7.

BUSINESS MEETING.

SATURDAY, December 7, 1901.

An adjourned meeting of the Society was holden at eleven o'clock today, the President, O. B. HADWEN, in the chair.

In the absence of the Secretary by reason of illness, Miss Charlotte M. Endicott was appointed Secretary *pro tem.*

Warren H. Heustis, Chairman of the Committee on Vegetables, read the Annual Report of that Committee.

The report of J. Woodward Manning, as Chairman of the Committee on Flowers, was read by the Secretary *pro tem.*

*This reduction was later restored on recommendation of the Executive Committee, making the appropriation for 1902, $8,075.—Ed.

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Arthur H. Fewkes, Chairman of the Committee on Plants, read the Annual Report of that Committee.

William E. Endicott, Chairman of the Committee on the Library, read the Annual Report of that Committee.

These reports were severally accepted and referred to the Committee on Publication.

The Schedule of Prizes for the year 1902 was reported by William H. Elliott, Chairman of the Committee on Establishing Prizes, accepted, and referred to the Committee on Publication. A printed statement of the changes from the Schedule of 1901 was also presented.

William H. Spooner moved that when the meeting adjourned it should be for two weeks, in order that Committees which had not yet presented their reports be given further opportunity in which to read them. This motion was carried.

Patrick Norton, Chairman of the Committee on Gardens, announced that the report of that Committee would be presented at the next meeting.

William C. Strong presented the following memorial of Thomas Meehan:

It is with deep regret that the Massachusetts Horticultural Society learns of the death of Thomas Meehan, of Philadelphia, on the 19th of November last. For nearly half a century our members have had constant fellowship with him in the various departments of horticulture in which he distinguished himself. He first became known to us as a nurseryman, the late William Saunders being his partner, until his transfer by the United States Government.

Subsequently Mr. Meehan was the sole proprietor of one of the most varied and extensive nurseries in the United States, bringing his sons into training in the latter years of his life.

In addition to the vast amount of care involved in this enterprise he early took upon himself the founding of the "Gardener's Monthly," which he edited and published with signal ability for twenty-nine years, it being the leading periodical for nurserymen and gardeners. After the multiplication of periodicals devoted to the florists' and nurserymen's trade, Mr. Meehan changed the character of his Monthly, making it eminent in illustrations of native plants, in botanical descriptions, and in notes in the varied departments of landscape and horticulture.

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In the midst of the enormous demands of these business enterprises, Mr. Meehan found time to gratify his love and his genius for botanical research and he attained such proficiency that he became the valued correspondent of the late Professor Asa Gray and other experts in this country and in Europe. He was elected a Corresponding Member of this Society in 1869.

His mind was surprisingly alert to discover the secrets of nature, and to reveal the infinite wisdom of the Creator.

And to all this multiplicity of labor he yet added eminent service as a good citizen, jealously guarding the interests of the great city of Philadelphia for many years with signal skill and credit. The parks of that city bear witness to his wisdom. To few men have been given the privilege and the high honor of doing so much for the welfare of his fellowmen. We honor his memory; we mourn his loss.

To the family of the deceased we extend our sincere sympathy, while we congratulate them upon the rich inheritance they have received in his noble and honored life.

It was voted that this memorial be accepted and adopted.

On motion of William H. Spooner it was voted that the Society tender the use of its halls to the State Board of Agriculture on the occasion of its Semi-Centennial next July.

On motion of William C. Strong it was voted that the Committee of Arrangements be instructed that exhibitions which are open on Sunday shall be free on that day.

Charles Scully of Norwell,

having been recommended by the Executive Committee for membership in the Society, was on ballot duly elected.

Adjourned to Saturday, December 21.

BUSINESS MEETING.

Saturday, December 21, 1901.

An adjourned meeting of the Society was holden today at eleven o'clock, the President, O. B. Hadwen, in the chair.

E. W. Wood, Chairman of the Fruit Committee, read the Annual Report of that Committee, which was accepted and referred to the Committee on Publication.

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Patrick Norton, Chairman of the Committee on Gardens, said that the report of that Committee was not ready but would certainly be at the January meeting and that the amount appropriated for that Committee was $500, of which $420 was awarded.

Further time was granted the Committee to prepare their report.

It was voted that reports of Committees not yet ready go over to the January meeting, and that the Secretary notify the Chairmen of such Committees to have them ready at that time.

J. Woodward Manning, Chairman of the Committee on Flowers, said that the Committee had under consideration the award of the Prospective Prize, which might increase the amount awarded by $30. He added that the amounts offered for Prizes for Flowers had not for two or three years exceeded the amount offered. This year the amount offered was $300 less than the amount appropriated.

It was voted that the offer in the Schedule of Prizes for Timber Trees be changed to correspond to the law of the Commonwealth requiring this prize to be offered.

Robert Manning read his Annual Report as Secretary and Librarian. The statement therein as to the insufficient width of the shelves provided by the Building Committee led to some remarks on that subject by Ex-Presidents William C. Strong and William H. Spooner, and William E. Endicott, Chairman of the Library Committee. It was finally left to the Library Committee to consider and report what changes are in their opinion necessary in the Library Room, with an estimate of their cost.

The subject of charging an admission fee on Sunday to such exhibitions as are kept open on that day was discussed, as also its legality, but no action was taken.

The meeting was then dissolved.

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REPORT

OF THE

OPENING FLOWER SHOW.

HELD UNDER THE AUSPICES OF THE BUILDING COMMITTEE

JUNE 3-13, 1901.

By GEN'L FRANCIS H. APPLETON, CHAIRMAN.

Upon request, and in order to record in the Society's Transactions some account of the Flower Show of June, 1901, the undersigned has undertaken to do so by a few preliminary remarks followed by quotations from published articles which seem to him to be appropriate.

No attempt is made to catalogue the many plants there shown, as the press reports of that time furnished good records of the Show. It was originally intended that the Flower Show at Horticultural Hall should open on May 29, 1901, but the cold storm of the 19th having delayed the blossoming of many of the rarest flowers which were to be a part of the Show, it was found necessary to postpone that date to June 3 and close on the 13th, which was a continuance of a few days beyond the time originally selected. It was thought that so choice a display ought to be prolonged, and the owners of the many specimens kindly assented.

It is not possible to fully appreciate the amount of work accomplished by Professor Sargent, who planned the disposition of the exhibits and into whose care the owners so loyally placed such a vast number of valuable specimens, in their readiness to co-operate in promoting knowledge of a high standard of horticulture. From the time when Professor Sargent undertook to direct the future Show, until the hour when the last plant was safely in the

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keeping of its owners, he was untiring in the efforts which resulted in so great a success.

The upper stories of the new Horticultural Hall had not been completed when the Flower Show of June 3–13, 1901, was opened, the Library being dedicated with due ceremony on November 9, following.

The Flower Show was not an exhibition where competition took place nor one at which money and medals were to be distributed, but was a great exhibit of what the wealth of capital in money and intelligence with loyal public spirit can do to promote interest in horticulture, and give a vast amount of pleasurable education to the people of Boston and those of other cities and towns in Massachusetts.

This Show was as choice in its line as has ever been within our reach or possibility. The lecture hall had then a floor of rough boards; the grand exhibition hall had an earth floor artistically divided by gravel walks into large beds in which exhibits were made with superb color effects. The small hall had its cement floor with facilities for quick drainage of the surplus water used for the orchids. The total effect in each hall and in the approaches thereto was superb.

The question of opening the Show on Sunday was before the management and was considered broadly and with great care. In order that all should have full opportunity to examine and study the plants and flowers it was decided to keep the show open at appropriate hours on Sunday at reduced rates.

The hours selected for opening and closing were 10 A.M. to 10 P.M. on week days and 1 P.M. to 10 P.M. on Sundays.

Favorable opportunities for visiting the exhibition, under suitable rules and at nominal rates, were extended to the school children of Boston and neighboring cities, as well as to the national conference of the Young Men's Christian Association then in session in Boston.

The electric light, telephone, and street railway officials gave us their aid in rearranging their street wires and in completing the out of door surroundings to our advantage as far as possible. To the Police Commissioners we are indebted for courteous co-operation and assistance.

While the Society gave the free use of the halls, the manage-

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ment of the Show was held responsible for the financial results. Of the current expenditures on account of the Show, about one thousand dollars' worth of property was left in the possession of the Society as permanent additions to its plant.

A notable feature of the occasion was the day when that distinguished horticulturist, the constant friend and supporter of horticulture, Mr. H. Hollis Hunnewell, recovering from a severe illness, came from his estate in Wellesley to inspect and enjoy the Show.

The photograph then taken, which represents him in company with Mr. Sargent, sitting in the grand hall surrounded by the rare and beautiful specimens from his own and other estates, should be enlarged and preserved in our halls.

The Press of Boston and throughout Massachusetts came loyally to our aid in making known to the citizens of our Commonwealth, that choice types of horticulture were to be displayed in the new halls for their enjoyment, and much writing was done to promote the knowledge of what the Show would be, and to further its success.

The display made was evidently highly appreciated and most beneficial from an educational standpoint. The absence of competition for prizes was looked upon by many as a commendable feature, and the quality and quantity of the exhibition was certainly not lowered by its absence.

The awards that came from words of high praise in the Press were indeed Certificates of Merit that must have been highly prized by exhibitors. The modern method now being adopted by some associations and societies, of extending encouragement in the form of Certificates of Merit for marked excellence, should be carefully considered as to its promotive value.

For the real report of this June Flower Show I prefer to take the ex-parte statements of the Boston Press and select the following description of the exhibition from the Boston Transcript of June 4, 1901.

In the history of American horticulture the opening exhibition of the Massachusetts Horticultural Society in its new hall on the corner of Massachusetts and Huntington Avenues, now in progress, marks the highest point yet reached in floral displays in this country. The exhibition opened last evening at eight o'clock and all the evening the hall was thronged with flower lovers. There was no diminution in the attendance

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this morning and half an hour after the exhibition was opened, at ten o'clock, there was a crowd that occupied all the aisles of the three flower-filled halls.

Entering the spacious vestibule, with its tiled ceilings, the visitor to the show turns to the right and enters the lecture hall. The eye is caught first by a splendid collection of wistarias of the purple variety, from the greenhouses of Professor Charles S. Sargent of Brookline, who has been the moving genius of the exhibition, and to whom is due the credit for the arrangement and plan of the exhibition. These are on the left artistically grouped, and on the right are long benches of gloxinias interspersed with adiantum farleyense to hide the pots, and forming a bewildering and kaleidoscopic group of colors.

Three white wistaria plants are ranged above this exhibit, and on the Huntington Avenue side of the hall is a bench of pelargoniums in rich bloom. The gloxinias are from the Sargent, Hunnewell, and Sprague estates and the pelargoniums are from the Hunnewell and Weld greenhouses. On the stage at the end of the hall is the finest specimen in America of the palm known as licuala granda from the estate of H. H. Hunnewell in Wellesley. On either side of this are graceful palms of the areca lutescens variety, and with a bank of amaryllis and lilium longiflorum, the effect is superb. In either corner of this hall are magnificent bay trees from the Italian gardens of Mrs. Charles F. Sprague of Brookline, the pots being masked by beautiful hydrangeas of immense size from the Sargent estate.

In the loggia between this hall and the main exhibition hall are arranged several plants of the rhyncospermum jasminoides, commonly miscalled jasmine, and bearing thousands of delicate white blossoms between their shiny green leaves. The effect of the view of the main hall from this point cannot be surpassed. It is one glorious blaze of color.

The plants which are used here are azaleas, rhododendrons and palms, and these have been arranged with the highest art by Professor Sargent assisted by Miss Beatrix Jones, the landscape gardener, so that they appear as if growing in a garden. At the right from this vantage point is seen a bank of Indian azaleas of the white and pink varieties, with here and there a sport showing in the snow-white bloom. On the left are the red and rose varieties of azaleas massed to show to the best advantage with borders of turf to complete the garden effect. Some of these plants are thirty years old and show the effect of the highest cultivation.

In the centre of the hall with pots sunken below the level of the turf are thirty-three splendid azaleas, one of the finest being a rose variety known as Marie Verschaffelt. The azaleas are from the private greenhouses of Professor Sargent. At the end of this hall is a splendid bank of rhododendrons from the Hunnewell estate, where rhododendron culture has been carried to the highest point reached in this country. All around the hall is a background of palms from the Ames, Sargent, and Hunnewell estates. The orchid collection which is in the small hall leading off from the main hall is the best ever gathered in America and conveys some

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ideas of the richness of the private greenhouses in Boston and its vicinity. The largest exhibitor is Mrs. F. L. Ames of North Easton and others who have contributed are E. V. R. Thayer of South Lancaster, W. P. Winsor of Fairhaven, J. S. Bailey of West Roxbury, H. H. Hunnewell of Wellesley, Mrs. C. F. Sprague, J. E. Rothwell and Dr. C. G. Weld of Brookline. They were arranged with the highest of artistic skill by W. N. Craig the gardener of the Ames estate . . . There are in this hall about a thousand orchids including many rare and choice varieties. Of the cypripediums there are fifty varieties and there are about three hundred cattleyas. . . . In addition to the orchids more than a thousand adiantums and five hundred palms ranging from a few inches to fifteen feet in height have been used for decoration.

During the Show the Boston Cadet Band furnished excellent music afternoons and evenings which attracted people who might not otherwise have derived pleasure and profit from this wonderful combination of the horticulturists' skill.

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DEDICATION OF THE NEW BUILDING

OF THE

MASSACHUSETTS HORTICULTURAL SOCIETY.*

On the morning of the ninth of November, 1901, the new building of the Massachusetts Horticultural Society on Massachusetts Avenue was formally dedicated. The exercises were held in its spacious library. The annual Chrysanthemum Exhibition was in progress in the Exhibition halls and its brilliant display had attracted a large number of interested spectators.

Vice-President Benjamin P. Ware called the assembly to order and announced that, owing to the sudden death of the President's wife, Mr. Hadwen could not be present; his absence to be regretted in any case was far more so today.

He said that on this occasion when the Society is holding such an important show, marking a milestone in its annals, it should recognize the relation that the Society's work bears to the work of the divine Creator. The God-given talent of cultivation has resulted in a development of flowers infinitely superior to the products of unaided nature. The same has been true in all other lines of our work.

Mr. Ware then called upon Rev. Edward Everett Hale for prayer as especially appropriate to the dedication of such a temple.

Dr. Hale in an earnest prayer invoked the divine blessing upon the work of the Society and dedicated this temple of horticulture to the Creator of all life.

Mr. Ware said that this is the fourth home of the Society, marking a great transition from its first home, a room on North Market Street. The value of having a home where the books of the library, which could not be replaced, can be safely stored is

* With the exception of the Addresses of President Hadwen and Ex-President Appleton this chapter has been compiled from the very full descriptions of the dedicatory exercises published in the Boston Transcript, the Boston Globe and the Boston Herald of November 9, 1901.—Ed.

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inestimable. The progress of horticulture can best be demonstrated by looking at the splendid exhibit in the halls below, an exhibition which has never been surpassed in this State.

Hon. James L. Myers, Speaker of the Massachusetts House of Representatives was then called upon. He said that an exhibition such as this was one of the timekeepers of human progress, as President McKinley said of the Exposition at Buffalo, and then read from the Blue Book of 1829 showing the granting of a charter to the Society.

He spoke of the annual exhibitions as successive steps of progress and remarked upon the great benefits that all classes of people have derived from the work of this Society, and expressed a belief in the great measure of influence and usefulness that would go out from this hall and this library in the years before us. On behalf of the State he extended his earnest and warm congratulations.

A letter from Congressman Wm. H. Moody regretting that on account of a previous engagement, he could not be present to represent the nation was read, but Mr. Ware said that there was present a gentleman who represented the cause of humanity everywhere and called upon the Rev. Edward Everett Hale.

Dr. Hale made as usual a felicitous address. He said that if he should say all he felt like saying most of his hearers would wish they had brought a luncheon.

He then told of the work done by hundreds of children in Genesee Street at the South End, and how eager the people were to get the window-boxes that were provided, and how, when fall came and the gardens died, planting bulbs for spring was thought of.

He said that he wrote to the Department of Agriculture in Washington stating that he appreciated the work they were doing in North Dakota and Idaho and Nevada, but he wanted to know what they proposed to do for the benefit of agriculture in Genesee Street and then he told them what bulbs he wanted and he got them and the children up in that street are planting them today.

He wished to emphasize the necessity of being in the open air, a doctrine which he had preached at all times and which he should always go on talking about. It is one of the cardinal rules of good living.

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Mr. Ware then introduced General Francis H. Appleton who made the principal address of the day, speaking as follows:

MASSACHUSETTS HORTICULTURAL SOCIETY: HISTORY OF THE SEED SOWN EARLY FROM WHICH THE MASSACHUSETTS HORTICULTURAL SOCIETY HAS DEVELOPED.

Mr. President, Members and Guests:

The date of origin of the Massachusetts Horticultural Society may be given as February 24, 1829, that being the day when the first formal action was had at a meeting of prominent horticulturists of Boston and vicinity. Measures were then taken looking to a permanent organization, and an adjournment was made to March 17, ensuing, when a constitution and by-laws were adopted and complete organization was affected by choice of a board of officers.

This was not a result suddenly arrived at; it might be said that many preliminary meetings extending through years had led up to it. Among the acts or events which may be described as preliminaries — though, indeed, not so intended — were the establishment and maintenance, during the preceding period of twenty-five years or more, as a matter of individual enterprise on the part of citizens in eastern Massachusetts, of numerous fine gardens of fruits and flowers. A like-mindedness in taste and enterprise would certainly be promotive among such of a degree of fraternization, active and cordial as proximity or opportunity might permit, and leading very easily though gradually to organization and coöperation.

Indeed, some note of preparation may be found in the records of horticultural endeavor in the earliest periods—those of the colony and the province and these manifestations became more frequent and more elaborated during the years of prosperity following upon the establishment on firm foundations of the government of the Union after the war of the Revolution had ceased.

The distinction *now* made and emphasized between the affairs or the products of agriculture and horticulture was not recognized by the former generations. All was considered under the

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head of agriculture. Even at this day, in the administration of the government at Washington, all matters relating to the tilling of the surface of Mother Earth are classed as agriculture, and the department of bureaus and divisions which comprises those interests in which our society is concerned is officially called the Department of Agriculture.

Governor Winthrop, at Ten Hills farm in Charlestown and Governor Endicott at Salem, were extensive growers of young fruit trees and dealt in them as commodities, supplying their neighbors and fellow colonists; and Governor Prince of Plymouth Colony in an humbler way but in some fashion, seems to have been a promoter of horticulture there. It cannot be doubted that the doings of these Governors proved exemplary and called out not merely praise but imitation.

Of gardens which can be characterized as of fame but few are mentioned by the writers of these early times. It may be permissible, however, to refer to two, of which this may be said, that the respective situation of each was, probably, in sight from the point where we are now assembled.

One was the earliest of which Massachusetts has any record, the garden of William Blackstone on the westerly slope of Beacon Hill. On his departure for Rhode Island he was sufficiently paid for his garden by the local authorities, and, as money was a matter of high consideration in those times, we may well believe that his successors in the ownership and control of the garden, whom he called the "Lord Brethren," carefully fostered and preserved it.

In Governor Winthrop's day a garden was set apart for him and his successors by the General Court on one of the upper islands of the harbor, which then had the name bestowed upon it of "Governor's Garden." The name has come down to these times as "Governor's Island." It was proposed to have a vineyard and an orchard there, the product, in part, to go towards the Governor's salary.

At first a hogshead of wine was specified, but the grapes probably failed in that bleak situation, and, in the year 1640 the rent or what perhaps may be called the "royalty," was reduced to two bushels of apples, one for the Governor and one for the General Court.

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Among the orders adopted in England by the Massachusetts Company, in anticipation of the migration hither, was one to provide English seeds, roots and plants for the proposed settlement. In the list of fruits appear the peach, plum, cherry, pear, apple, and quince; also currant plants.

The evidences are many that during the Provincial as distinct from the Colonial period Massachusetts communities made notable advances upon the achievements of their predecessors in the line of horticulture. Still it cannot be said that horticulture was a characteristic of the out-door industry of that day. Only the wealthy or more prosperous citizens had gardens of fruits and flowers. The general yield of the soil was specifically agricultural.

But we have mention of beautiful gardens in Boston and other populous centres. Would that there had been Kodaks in those early days to depict for us those early gardens. The eastern slope of Cotton or Pemberton Hill fronting on what we know as Tremont Row and Tremont Street north of Beacon Street, was to a very considerable extent terraced, and the successive levels of arable land were stocked with choice fruits and flowers.

Andrew Faneuil and his nephew and successor, the famous Peter Faneuil, owned and occupied one of the most celebrated of these estates. Its location was about opposite to the King's Chapel burial ground. The late Lucius M. Sargent, who had probably better information about the matter than any modern man, described the estate as "Faneuil's seven-acre Eden." The next estate was that of Governor Bellingham, and others of similar planning and adornment were farther to the northward along the slope.

Thomas Hancock, the uncle of the patriot and first Governor under the Constitution, appears to have had two slopes thus terraced and made luxuriant,—one on the south, near the Hancock mansion and overlooking the Common, and one on the north, covering, in part, territory known to us as upper Hancock Street and the State-House-extension lot.

Without doubt these numerous demonstrations of the horticultural art served both as instruction and incentive to others.

Horticulturists of the patriotic order who remained on their estates could have found but small opportunity under the conditions

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prevailing in the ensuing ten or fifteen years, from the commencement of the Revolution, to gratify such tastes for horticulture.

But, as already intimated, the establishment of the new government on a solid basis brought about a revival. Cultivators of the soil throughout all the States took on new hope and enthusiasm, the chief men of the several communities leading the way. While the order of the Cincinnati established during this period encountered some opposition and criticism, the example of the old Roman, from whom the order derived its name, was very generally followed.

Washington, first in peace as in war, may be said to have been an early pioneer in this movement. The records of his diary and his correspondence show his personal activity in the way both of agriculture and horticulture. While the crops of tobacco, of maize, of cereals and roots of various sorts were diligently attended to, he found time to plant not only fruit trees but ornamental trees on his homestead premises. He surveyed, or caused to be surveyed, the grounds about the mansion, and designated on the plan thus produced the spot where certain trees or shrubs were to be set. He imported choice vines and trees from Europe.

He writes to a friend during these activities, expressing hope of a visit at a future day, and says that he will greet him under the shade of trees which his own hands have planted.

In these records we may read of exotic shrubs; of the planting of elm, maple, hemlock and ash trees along winding paths; of planting holly bushes and sowing holly berries in drills; of a green-briar hedge; of lilacs and honeysuckles; and also, in the same general scheme, we are informed of grapevines, crabapple trees and mulberry trees. What more beautiful spot than his ancient homestead's site at Mt. Vernon.

The second President of the United States, John Adams, during his term as Vice-President, became one of the founders of the system of agricultural societies in 1792, and throughout his long life never ceased from his enthusiasm for agriculture and horticulture.

And the third President, Thomas Jefferson, was an endless experimenter in these lines. Had he never gained international fame as a statesman and publicist, he would have gained it as

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practitioner in farming and horticulture, and as inventor of appliances used in those arts.

The details need not be traced, for it will suffice to say that the impetus thus originating in the latter part of the 18th Century did not cease to be effective during the first quarter of the 19th, and that, in this condition of things, as the year 1829 was approaching, the formation of the Massachusetts Horticultural Society became an affair not so much, perhaps, of strenuous endeavor as of normal and timely evolution.

If what has thus been suggested may be regarded as remotely preliminary to the formation of the Society, certain circumstances, familiar enough to those who have scanned the official publications of the Society, may again be cited for the information of others, as being more directly and immediately preliminary.

In the year 1793 the first number of a magazine devoted to agriculture was issued in Massachusetts, which also had much bearing on horticulture. It was entitled the "Agricultural Repository." It continued periodically to appear until 1822, when a similar periodical was established by Thomas Green Fessenden, called "The New England Farmer." The field was cheerfully yielded to the new magazine by the publishers of the "Repository." The new periodical gave somewhat more space to matters horticultural, and, in the year 1828, the title was enlarged by adding the words "and Horticultural Journal."

In November, 1826, Joseph R. Newell, who had previously kept an agricultural warehouse elsewhere, removed to 52 North Market Street. In January, 1827, the office of the "Farmer" was established in the same building, on the second floor, where John B. Russell, then the publisher of the "Farmer," opened a seed-store.

The close combination of the "Farmer" office and the seed-store with the agricultural warehouse attracted agriculturists and horticulturists from all parts of the country; so that the office of the "Farmer" became an exchange for the discussion of all matters of interest to cultivators.

It was here that the subject of forming a horticultural society was discussed and when such a society was formed the "Farmer" naturally became its organ, when needed, and continued to be as long as the "Farmer" existed, that is, till the year 1846.

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But the most immediate preliminary to the formation of the society was what may be styled a call and a response on the part of two citizens of reputation in a literary as well as horticultural way.

On January 9, 1829, a communication from Zebedee Cook, Jr. was printed in the "Farmer." It affirmed in quite eloquent terms the merit and utility of the horticultural art and called the attention of the practical horticulturists of the community "towards the founding of a Society for the promotion of that useful employment, of extending its blessings, and increasing the efforts of those who feel an interest in such pursuits."

The editor, Mr. Fessenden, cordially commended this appeal, and, in so doing, declared that "a Society for the promotion of skilful and scientific horticulture, established in Boston, would greatly subserve the interests of the community, as well as furnish avenues to laudable distinction and pure and praiseworthy enjoyment to the members of such an institution."

In the issue of the "Farmer" of the evening February 20th, an invitation, or "request," appeared addressed to such gentlemen as felt favorably disposed towards the institution of a Horticultural Society, to meet on February 24, at noon, at the insurance office of Zebedee Cook, Jr., for the purpose of taking preliminary measures thereto."

The record goes on to say that "although the day was bitterly cold, and a remarkable snow storm had just filled the streets to a depth of five or six feet, sixteen gentlemen appeared at the meeting."

The place of meeting was on Congress Street, No. 7½, or five doors southward from State Street. The insurance office bore that number, and the records of the board of assessors show that the location must have been what would now be described as the south-easterly corner of Worthington Building.

General H. A. S. Dearborn called the meeting to order and made fitting introductory remarks. The Hon. John Lowell presided and Zebedee Cook, Jr., was Secretary. Messrs. Dearborn and Cook, together with Samuel Downer, were made a committee to prepare a constitution and by-laws, and John B. Russell, Enoch Bartlett, Zebedee Cook, Jr., Samuel Downer and Cheever Newhall were associated as a committee to procure subscribers

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to membership. The meeting was then adjourned to assemble at the same place on March 17, and then a constitution and by-laws were adopted and a permanent board of officers was chosen. General Dearborn was elected the first President of the Society.

The persons whose names are thus fortuitously brought together as being the first mentioned among those who are to be regarded as founders of the Society were representative men. The remainder of the one hundred and sixty subscribers, who were reported at the meeting of March 17, were men of like habits and sympathies.

Zebedee Cook, Jr., was a prosperous business man of the period and owned a fine estate of twenty-five acres, or more, in Dorchester. It was of irregular shape, fronting westerly upon what was then the turnpike road, now Dorchester Avenue, and southerly, with narrow dimensions, on Crescent Avenue. The southerly slope was made to be a triumph of horticulture, flowers and fruits sharing about equally in the honors. Near the front this garden was adorned by a lively brook, arched with grape vines, and in the rear the ground was thrown into terraces, which in the season were made brilliant with flowers. The ascent was crowned at the north with a rocky summit which gained the name of Cook's Hill. Thence a tract of arable land stretched, with ever widening margins and with gradual descent to the salt marshes.

This northerly tract was the farm. Agriculture had full sway here and in the centre was a huge barn for cattle and the storage of crops. Through this farm-tract the parkway called Columbia Road now extends towards South Boston.

The original estate had been split in two to make way for the Dorchester turnpike road, and the mansion house stood upon the westerly side of that road, on a triangular lot.

General Dearborn was the owner and occupant of an estate of eighty acres in Roxbury, near where Huntington Avenue now joins the old Brookline road. The mansion and grounds had been modelled by a preceding owner after some distinguished estate or the like in England.

That some share of this large estate was applied to horticulture is evident by the mention of General Dearborn as an exhibitor of rare fruits and flowers in the earliest exhibitions of the Society,

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and by the fact that, on August 13, 1830, he had upon the table of that day's exhibition the first specimens ever shown of Dearborn's seedling pear.

John Lowell was the proprietor of what has been called a baronial estate at Roxbury. It was of extensive area and he had built upon it a stone residence copied from some European structure. The situation was on old Heath and Centre Streets. This estate, like that of Mr. Cook, though at a much later date, was cut in two to make a public way, in this instance not a turnpike road but the Boston and Providence railroad. Of its proper pretensions and just renown in the way of horticulture an opinion may be formed by the fact that the estate in Mr. Lowell's time had upon it five greenhouses.

Samuel Downer had at Dorchester one of the best stocked and best kept horticultural estates in the vicinity of Boston, at the date now referred to, and it held that rank for years afterwards. Its situation was the south-east declivity of "Jones' Hill." Its terraces were numerous and extensive. Fruits, rare in the extreme, were upon this hillside; flowering plants were scattered in settings here and there, and tribes of honey bees, whose hives occupied the level below the terraces, were busy and melodious at their work. On this estate originated the famous Downer cherry.

Enoch Bartlett's estate, in Roxbury, bordering southerly upon the present Dudley Street, northerly upon Magazine Lane and easterly upon Governor Eustis's estate, matched in some respects and surpassed in others that of Downer. The honors appear to have been about even between the two as to choice original fruitage; for on these Roxbury grounds was first produced the incomparable Bartlett pear.

Cheever Newhall owned and cultivated extensive farming tracts in Dorchester, towards one hundred acres in all. His homestead lot was perhaps of twenty-five acres, lying on the northerly side of the present Ashmont Street, and stretching towards Adams Street. Here he had flourishing orchards, principally of pear trees, of which there were several hundred. He was a man of enterprise and public spirit.

It does not appear that Messrs. Fessenden and Russell were men of landed property at the time now in view, but they were ardent champions of horticulture and efficient helpers in that cause.

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The membership list of one hundred and sixty reported in March had, by September 10, 1829, increased to two hundred and forty-nine, comprising the names of many of the scientific and opulent citizens of Boston and suburbs, as well as considerable numbers of practical cultivators.

On April 28, 1829, the Society petitioned for an act of incorporation, which was promptly granted by the General Court, and was approved on June 12 by His Excellency Governor Lincoln, himself a practical horticulturist of your own energetic and busy city of Worcester, Mr. President, with its estates and Park land in whose Board I believe you are President.

The room where the meeting for organization of the Society was held, No. 7½ Congress Street, served in like manner for three subsequent meetings. It was convenient in some respects, situated at a central point, Mr. Cook's office being on the first floor. But with the increase of membership more space was needed, and, on June 9, arrangements previously made enabled the Society to hold a meeting in the building on North Market Street already spoken of. Here a place on the third floor had been fitted up, and in the first instance was called "the Society's room," which phrase the secretary improved upon in the next call — of date, June 12 — for a meeting, by giving the room a title as "Horticultural Hall."

The building has never quite lost the particular prestige thus obtained, and is still resorted to with horticultural intent and purpose, being now known as the Messrs. Breck's Agricultural Warerooms, from our distinguished Ex-President Joseph Breck, 1859–1862. Here the Society's earliest exhibitions of flowers were given, charming ones we may well believe, but small if measured by the present standards. The formation of a library, it appears, was also begun here. The situation and the outlook might be deemed, by Bostonians at least, as propitious for a beginning, giving a view of Faneuil Hall at the right hand, Quincy Market building and the market place on the left, and, through the vista of Merchants' Row, a glimpse of State Street.

The routine of things began at once by the display of choice samples weekly on Saturdays, though not during the winter season. The first weekly offering of products took place on June 20, 1829.

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The first annual exhibition, on September 19, 1829, was made in the dining hall of the rebuilt famous hotel, known as the Exchange Coffee House. Visitors were admitted from 12 M. to 2 P. M., the members of the Society and guests being the exclusive occupants at 4 P. M., when a banquet was served,—a truly English idea to banquet, surrounded by the especial evidences of the objects for which the association existed. In the interval between the closing of the exhibition and the hour for dining, li erary or oratorical exercises took place in the hall of the Boston Athenæum.

Weekly displays continued to be made, as at first, at the North Market Street hall until May 14, 1831, when rooms were occupied in Joy's Building on Washington Street.

An enterprise, after considerable informal discussion, was entered upon on November 27, 1830, in the appointment of a committee "to inquire into the expediency of purchasing a piece of ground in the vicinity of Boston for a garden of experiment and a rural cemetery." This action culminated in the establishment of Mount Auburn Cemetery. The record of the Society in this matter is familiar and need not be traced in detail here.

The Society's responsible connection with the cemetery ceased on June 19, 1835, that being the date of the deed of conveyance of the premises to the Mount Auburn Corporation.

It appears to have been felt that the improvement of horticulture could be better promoted in other ways for the encouragement of individual efforts in the horticultural art, by the provision of suitable halls for the exhibition of improved products, and by the collection of a horticultural library than by the continuance of a garden.

To the policy of administration thus set forth, the Society has adhered. Liberal rewards have been offered and bestowed; a hall for exhibitions has been maintained; important and superb exhibitions have been made; the library has been steadily increased, both in respect to number of volumes and its intrinsic value and practical utility; quantities of seeds and rare plants have in the past been judiciously distributed; lectures, or public addresses, on horticultural themes have been provided, and much literature relating to the horticultural art and bearing the Society's approval has been issued.

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Meetings, or banquets, of the Society have been graced by the presence of distinguished visitors from other states and lands and by men of special note among Massachusetts citizens.

Of the Society's brilliant festivals, the public assembly incident to the exhibition of 1845 could not have been surpassed, if ever equalled. The festival, as distinct from the exhibition, took place in the evening, in Faneuil Hall, which was made to be a scene of luxuriance by evergreen and floral adornment of the pillars and gallery fronts.

The President of the Society, Hon. M. P. Wilder, made the opening address, which was followed by speeches by Hon. Edward Everett, who had that morning arrived in Boston after a five years' residence abroad as minister to England; by Hon. Daniel Webster, who was introduced as "the Marshfield farmer"; by the Hon. J. G. Palfrey, Secretary of the Commonwealth; by Hon. Josiah Quincy, Ex-President of Harvard University; by Hon. R. C. Winthrop, and Hon. Caleb Cushing, who had just returned from his embassy to China. During the evening the venerable widow of Alexander Hamilton (daughter of Gen. Philip Schuyler), who sat on the right of the President, was introduced to the audience by Mr. Webster.

It may be remarked that on one or more occasions the annual exhibition was held in a huge tent on the Common. Besides its own halls in different locations (School Street and Tremont Street), the Society has; at different times, occupied for exhibitions Faneuil Hall, the Federal Street Theatre, Andrews Hall, and, four or five times, Music Hall.

That which I have endeavored to picture to you of the earlier days of this distinguished organization may be called the seed, the example, the incentive to the mighty changes and enormous advances that have followed.

Today, from the western line of Berkshire to the eastern shores of Massachusetts, the surface of our state bears evidence of horticultural activity and beauty in almost every degree of extent, and the advance is still making rapid strides.

In no small degree is our Society responsible for these results; she can well take much to her credit for the enhancing of the condition and beauty of the already fair face of this ancient Commonwealth.

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As it is thought of, one is amazed at the improvements. Think only of the landscape beauty upon the many estates of all sizes in what is known as Metropolitan Boston, for example, with a most extensive system of Parks; the superb private estates with gardens; and the glass houses and fields of market produce in Arlington, Belmont, Revere and elsewhere, conducted upon business principles, guided by scientific knowledge, that can be surpassed nowhere else in the world; the markets for the sale of produce from these gardens, and the flower marts in many stores throughout our cities, contain products that vie with or surpass any that elsewhere exist; the knowledge of good road building is now with us, and is being put into practice in a way to be of great benefit; the encouragement of window gardening and school gardens is a most commendable feature of our work that deserves encouragement; and all direct and indirect influence for horticultural good that goes out from the fact of our existence as a Society.

In the long roll of members, past and present, who have been making this honorable record for the Massachusetts Horticultural Society, there are too many for me to recount, and to whom we all bow in respectful recognition. You know them well for their fondness for horticulture and their actual promoting of it. Those who have established the several prize funds, those who have given towards the support of our library, and especially that giver of largest amount in money, call for high recognition.

The many superb products of the soil that have first appeared on our tables and in our Halls to the benefit of the public are too numerous for me to try to recount.

I have, perhaps, taken up too much time and necessarily omitted much, but may your memories fill the gaps with reminiscent, helpful and pleasant thoughts of horticultural activity, progress and success from the time of our incorporation up to today.

We are now in this new Hall of great architectural beauty, designed after visits were made to structures used for like purposes abroad; prepared for horticultural uses in all its parts, and for such other uses as may be judged profitable, while being helpful and promotive to horticulture, without interfering with the duties of the Society. Its library and office floor is indeed

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imposing, well lighted and quiet for its purposes; for the housing of its large and increasing, valuable library, which has reached more than ten thousand volumes bound and in pamphlet form. All is spacious. As the Society becomes more wonted to this new home, may its usefulness and honorable position that it has always held continue and advance, while it cares for the charge laid upon its shoulders by the State Government of 1829, at the instigation and by the wording of those earnest early horticulturists to whom I have referred "for the purpose of encouraging and improving the science and practice of Horticulture, and promoting the amelioration of the various species of trees, fruits, plants and vegetables, and the introduction of new species and varieties." Would that those words might be emblazoned on the walls of our Halls for all time, and may our Society always be most firmly united and organized upon the best business principles to uphold them.

I am sure that it has been the endeavor of all their successors in office and in the ranks, to strive to do their duty fully, and at all times, as they could best interpret it.

The great success of this Society has proved the wisdom of its management in the past; and with this building, and its large fund that will belong to it also ever devoted to promoting its aims and united effort for horticultural progress, success must ever be the goal that it will reach.

Let us ever seek to inspire a general and increasing interest in our work among the citizens of the Commonwealth so far as it is possible; may those who are able to make our large exhibitions for display a success by their exhibits, on the lines of instruction, pleasure, general helpfulness, and profit to the Society for other horticultural promotion, ever be ready to place their products within our Halls; and may those who seek recognition of merit and worth in new varieties ever find a continuance of the value to them of the award of merit from this Society, and seek it here.

May funds, from gift or bequest, continue to come to the Society from lovers of horticulture in every possible line for helpfulness, be they for effect either inside or outside of the Great Building.

We have now six hundred and eighty-two Life Members and one hundred and ninety-nine Annual Members — a total of eight

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hundred and eighty-one. May people of every line of horticultural earnestness be encouraged to give their support to our good and patriotic cause.

Mr. President, I thank you and the Committee for your courteous invitation to speak upon the occasion, and heartily wish that all possible success from united effort in the Society's work now in progress here may result.

At the conclusion of General Appleton's address Mr. Ware, the presiding officer, declared the building dedicated to the advancement of flowers, fruits and vegetables.

Upon motion of General Appleton an expression of sympathy was sent by telegram to the President of the Society.

Mr. William C. Strong moved and it was voted that the address which President Hadwen had prepared for the occasion be requested and be published with the proceedings of the day.

Address of President Hadwen.

The Massachusetts Horticultural Society has reached a period of seventy-two years of incorporated life, and now approaches the third important epoch in its history, — the dedication of this Horticultural Building in which we are this day assembled, it being the third erected by the Society during its incorporation; and perhaps it may not be egotistical to state that it is without a peer in its arrangements for exhibitions, its magnificent architectural effect, and in its solidity and durability of construction. With its refined environment, having frontage on three streets, it is not only a conspicuous building in Boston, but equal, if not superior, to any Horticultural building in the world.

The Society during its seventy-two years of active existence, eminent in its calling, has achieved a marked success in the practical advancement of horticulture, and has rendered service to the whole country by advancing the art and science of horticultural pursuits. Its progress has been manifest in every known feature. The entire State, with its system of parks and rural embellishments, its highways, its adornment of homes, its increased revenue from horticultural pursuits is largely indebted to this Society, as well as are individuals who have been benefitted by the object lessons of its exhibitions, its library and its lectures during the winter seasons.

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Let us hold in grateful remembrance the distinguished benefactors who, for this long period, have contributed their time and their means to insure the progress and prosperity of the Society, and let us encourage the active members now engaged in its wholesome work, both men and women who in the study of fruits, flowers and vegetables have natural and acquired fondness for pursuing the mysterious forces and hidden secrets which nature has always in store, and of which there is seemingly no end.

The silent, but magnificent exhibitions in the Halls denote the best practical demonstration of the progress of Horticulture, in which every season brings something new. Being now in gorgeous display, the flowers and the fruits of the autumn collected from all over the world are increasing the interest in the science of Horticulture in those who behold them; and the intelligence and skill manifested in their cultivation not only educate the faculties, but inspire a love for all that is beautiful and useful.

In the retrospect let us not be unmindful of the past, but ever cherish the work that has been accomplished by those who have preceded us in the great horticultural advancement that has made the Society eminent in encouraging the products of the fields, gardens and forests. These, being the special early objects of the Society, have now reached an importance unequalled by any period of time in the world's history.

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DESCRIPTION OF THE NEW BUILDING

OF THE

MASSACHUSETTS HORTICULTURAL SOCIETY.

ERECTED A.D. 1900.

The completion and occupation of the new building of the Massachusetts Horticultural Society on Massachusetts Avenue, Boston, marks the beginning of another era in the history of the Society. For many years the need of enlarged accommodations has been strongly felt, and at various times propositions have been considered looking toward a change of location and providing increased facilities for carrying on the work of the institution.

The present building, it is believed, will furnish such accommodations for many years to come. The Building Committee, under whose supervision it has been erected, consisted of Francis H. Appleton, Charles S. Sargent, William J. Stewart, George A. Nickerson and Charles F. Curtis.

The accompanying plans from the architects' drawings present the general arrangement of the interior of the building while the frontispiece shows a view of the exterior, as seen from the corner of Massachusetts and Huntington Avenues.

The first floor of the building covers an area of 18,066 square feet, and contains the large exhibition hall, a smaller exhibition hall and a lecture hall.

The main hall is reached through a spacious vestibule, but a single step above the level of the sidewalk, and is 52½ feet in width by 123 feet in length, the height being 42 feet, not including the monitor roof.

At the easterly end of this hall is the loggia, a raised platform four and one-half feet above the main exhibition hall. It has an area of 28 by 52 feet, and broad stone steps connect it with the floor of the main hall. From the loggia a commanding view of the exhibitions can be had.

The small exhibition hall is 28 by 57 feet and 28 feet, 6 inches in height.

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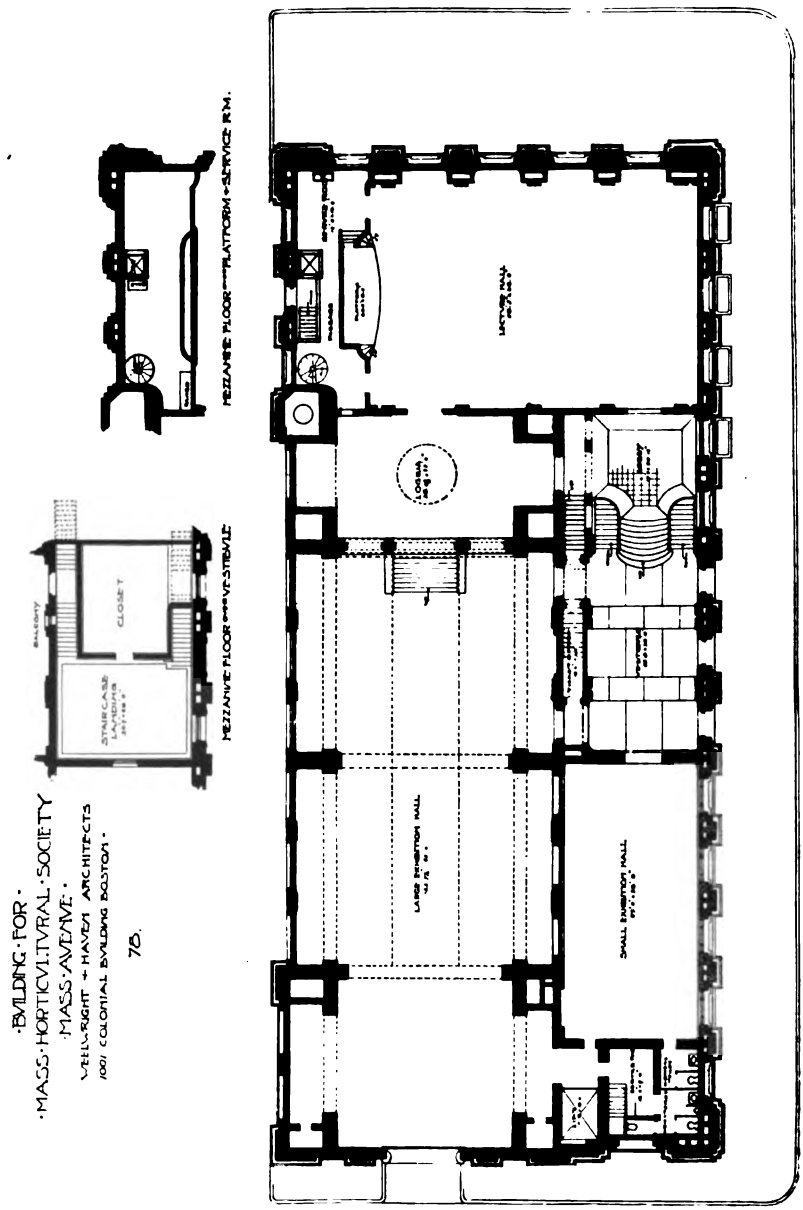

Plan of the New Building. First Floor.

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The lecture hall, which is on a level with the loggia, is at the Huntington Avenue end of the building and has a stud of 25 feet, and its dimensions are 48 by 68 feet.

The basement is devoted to the committee rooms, dressing and waiting rooms and a large banquet hall, the Falmouth Street end being occupied by the heating and electric apparatus with the necessary accessories.

The second floor, which is built around an interior court of 6,511 square feet, contains the spacious library and rooms for the use of the Secretary, Treasurer and committees. There is in addition large storage space for general uses.

The library is well lighted, arranged in alcoves and has a gallery around three sides. Every book is easily accessible without the aid of step-ladders. In design and finish the library is of great architectural beauty, and has ample capacity for at least fifteen years. The space for additional stacks, which the adjacent attics afford, gives room to meet all probable needs of book space that will ever be required.

The height of the building above the grade of the sidewalk to the top of the cornice is 57 feet, and to the top of the roof is 69 feet, 6 inches.

The construction is that of a building of the first class, as required by the building laws of this city, being in its main structure built of incombustible material.

The floors are of guastavino tile and concrete, or the concrete construction of the Eastern Expanded Metal Company.

In the roofs the same methods are employed, except that the roof over the large exhibition hall is composed in part of three-inch plank protected by metal lathing and plaster. The foundation's footings are concrete, widely spread upon the gravel and sand subsoil which was found to be too coarse to permit the economical use of piling.

The base course is of Deer Isle granite. The exterior brick is red, eastern water-struck, face brick, laid Flemish bond and the trimmings are of Bedford limestone.

The cheneau is of terra-cotta, matching the color of the limestone; the frieze panels being of Brescia, Bois d' Orient and Red of Levanto marble. The principal features of the facade are the

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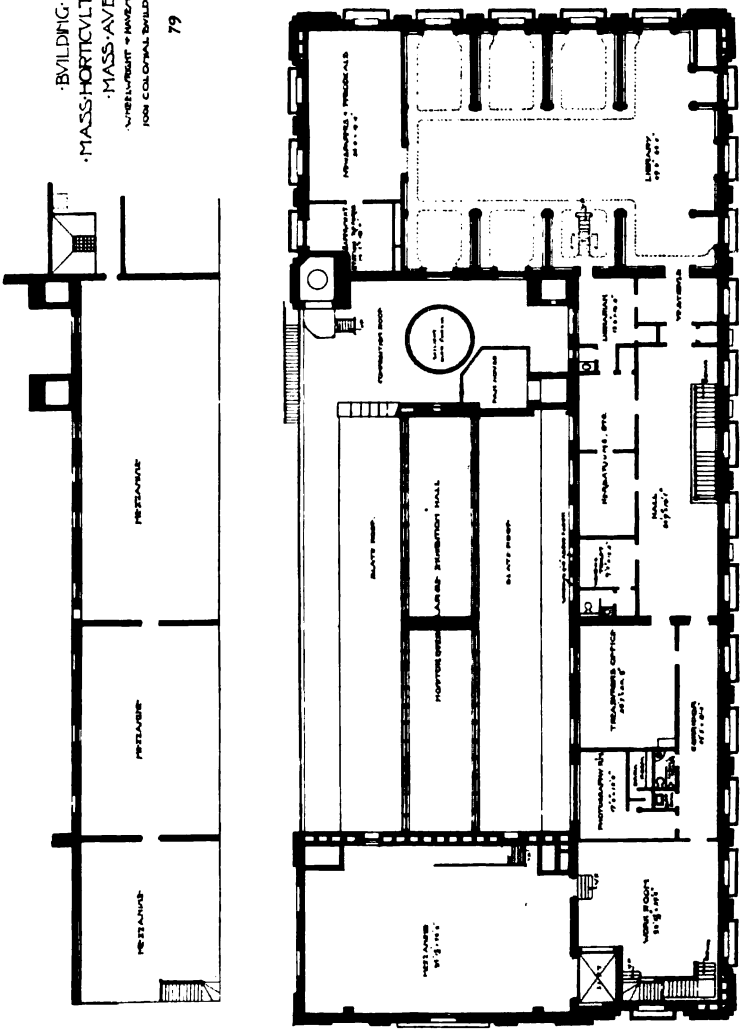

Plan of the New Building. Second Floor.

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corner piers and the colonnade of brick pilasters supporting an ornamental entablature.

The floor of the entrance lobby is of North River bluestone, and that of the committee rooms in the basement and the small exhibition hall is granolithic.

The lecture hall, loggia and second story rooms have Georgia pine floors, while the large exhibition hall which has a temporary spruce floor, was originally designed to have a gravel floor so that pots of plants might be readily imbedded therein with a garden effect like that of some European horticultural buildings.

The walls of the lobby and small exhibition hall are laid with eastern pressed brick and those of the large exhibition hall and its loggia with eastern water-struck face brick.

The committee rooms in the basement, the lecture hall and the rooms on the second floor, other than the storage room, have plastered walls and ceilings.

The south wall of the storage room on the second floor at the Falmouth Street end, over the large exhibition hall, is supported by a brick arch to avoid the necessity of using steel girders which would have to be covered with metal laths and plaster to conform to the requirements of the building regulations.

From Falmouth Street a wide and high doorway gives access on the street level to the floor of the large exhibition hall. This facilitates the easy and safe handling of large plants in the flower shows, thereby meeting the needs of the Society in this respect.

The interior finish throughout is selected Georgia pine. A large hand-lift serves the storage rooms on the Falmouth Street side of the building, and an electric lift, the well equipped kitchen over the service room which adjoins the lecture hall.

The heating, ventilation and electric work was carried out under the direction of Hollis French and Allen Hubbard, engineers, and the building was designed and constructed by Wheelwright & Haven, architects.

The cost of the building was $290,997 and that of the land $225,000, making a total of $515,997.

As an architectural work, the new Horticultural Hall is a noteworthy addition to the public buildings of the city, and its new location is destined to become the center of great business and social activities.

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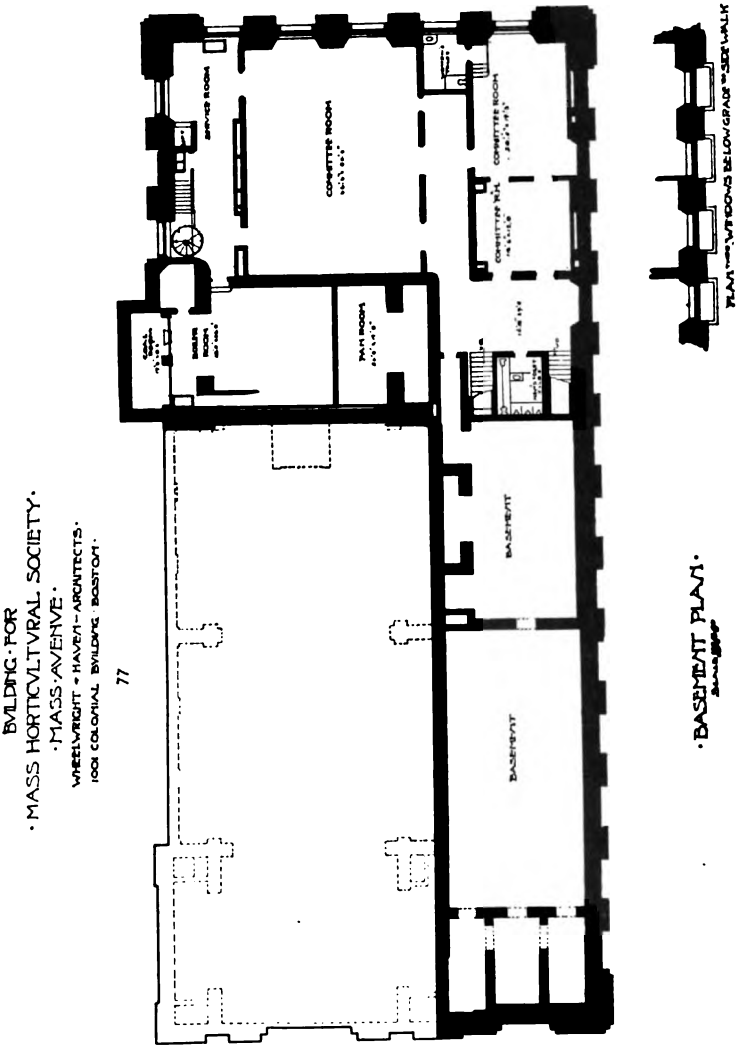

Plan of the New Building. Basement.

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REPORT

OF THE

COMMITTEE ON PLANTS

FOR THE YEAR 1901.

By ARTHUR H. FEWKES, CHAIRMAN.*

Notwithstanding the unsettled conditions under which we have labored the past year, our exhibitions up to the time of leaving the old hall, and since the completion of the new, have been very satisfactory, particularly in the general good quality of the exhibits.

During the early part of the year we were favored, nearly every Saturday, with fine displays of Orchids which were most interesting and instructive. It is gratifying to note the unabated interest shown in exhibiting this class of plants and we look for its continuance.

In May our Committee unfortunately lost its chairman, Mr. Lunt, by resignation, and as an orchid expert his loss to us is keenly felt. In the following report, the part which covers the time up to his resignation, — from January 5th to April 6th — was written by him, the remainder by his successor.

The first exhibits of the year were made on January 5. The display of Primulas on this occasion, while showing improvement over former years, was not up to the standard in the *stellata* group. James E. Rothwell showed *Cypripedium* × *Longwoodense*, a pleasing hybrid between *C. Leeanum* var. *Masreelianum* and *C. Charlesworthii*, which received Honorable Mention. Oakes

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* Elected Chairman July 6th in place of William Wallace Lunt resigned.—Ed.

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Ames exhibited three hybrid Cypripediums, viz: *Cypripedium* × *President McKinley* (*C. Harrisianum* × *C. insigne*), *C.* × *James A. Garfield* (*C. tonsum* var. *superbum* × *C. regale*) which received a First Class Certificate of Merit, and *C.* × *James K. Polk* (*C. Chamberlainianum* × *C. nitens*) which received Honorable Mention.

January 12. The exhibition on this day consisted of three very fine hybrid Cypripediums, as follows: — *Cypripedium* × *Chapmanii* (*C. Curtisii* × *C. bellatulum*) from Oakes Ames, *Cypripedium* × *Henry Graves, Jr.* (*C. Lawrenceanum* × *C. Marshallianum*) from J. E. Rothwell, and *Cypripedium* × *Hera*, var. *Trenton* (*C. Leeanum* var. *Masreelianum* × *C. Boxallii*) from C. G. Roebling of Trenton, N. J., the two former receiving Honorable Mention and the latter being awarded a First Class Certificate of Merit.

January 26. Henry T. Clinkaberry, of Trenton, N. J., exhibited a remarkably fine variety of *Cypripedium* × *Aylingii* var. *Washingtonianum* (*C. ciliolare*, giant variety, × *C. niveum* var. *grandiflorum*); this, without doubt, was *one* of the finest cypripediums exhibited for a number of years, combining as it did fine coloring and strength. It received the award of a Silver Gilt Medal.

February 2. The display of Freesias was disappointing, there having been a great falling off in late years of exhibits of this interesting class. R. & J. Farquhar & Co. exhibited a fine lot of Begonia Gloire de Lorraine var. *nana compacta*, for which they received a Silver Medal. Mrs. B. P. Cheney had twelve very fine plants of *Primula obconica*, and C. G. Roebling exhibited *Cypripedium* × *tessellatum* var. *Harrisianum*, for which he was awarded a First Class Certificate of Merit.

February 9. Walter P. Winsor exhibited *Dendrobium nobile* var. *Burfordiense*, for which he was awarded a Silver Medal. This is an unique form of *D. nobile* having the reverse marking of *D. Cooksoni*.

February 16. Mrs. F. L. Ames exhibited the most remarkable and interesting group of Dendrobiums ever shown within the remembrance of the Committee, receiving for the Collection a Silver Gilt Medal. They were as follows:

Dendrobium × *Ainsworthii* (type), and var. *roseum*,

" × *Amesianum*,

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Dendrobium Amesianum var. × *grandiflorum*, which received a First Class Certificate of Merit,

" × *chrysodiscus*, which received a First Class Certificate of Merit,

" × *Cybele*, which received a Silver Medal,

" *Dulce*,

" × *euosmum*,

" *nobile* (type),

" " var. *Arnoldianum*,

" " " *Backhouseanum*, which received a Silver Medal,

" " " *Cooksoni*,

" " " *majus*,

" " " *nobilius*,

" " " *virginale*,

" *Robinsonianum*,

" × *Schneiderianum* var. *giganteum*, which received a First Class Certificate of Merit,

" × *splendidissimum* var. *grandiflorum*.

Walter Angus, gardener to Hon. Moses T. Stevens, North Andover, Mass., was awarded a First Class Certificate of Merit for Superior Cultivation of Begonia Gloire de Lorraine, and the Harvard Botanic Garden received awards as follows:

Primula stellata var. *alba*, First Class Certificate of Merit for Superior Cultivation,

Primula stellata var. *compacta*, Honorable Mention.

February 23. Mrs. John L. Gardner exhibited several plants of a seedling asparagus, which was claimed to be new, and which the Committee asked to have shown again after having been planted out. It received the award of Honorable Mention.

March 2. Oakes Ames exhibited *Coleus thyrsoideus*, a new flowering coleus of a pleasing color, receiving therefor a First Class Certificate of Merit.

March 9. James Comley exhibited a seedling Indian Azalea, var. New Century, for which he was awarded a gratuity.

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SPRING EXHIBITION.

March 19, 20, 21 and 22.

This was a notable exhibition, and being the last large exhibition to be held in the old Hall each exhibitor apparently endeavored to do his utmost to make it a memorable one. It would not only be well nigh impossible but it would take too much space to give all the details of this exhibition, therefore mention will only be made of the more noticeable and important features. It is to be regretted that the class for Indian Azaleas is not competed for to a larger extent, the class (No. 29) for six named varieties not having an entry. Class No. 32, for Specimen Orchids brought out a grand display from Bayard Thayer (James Brydon, gardener). The display of Dutch Bulbs from the various exhibitors was all that could be desired, all being of exceptional merit. The exhibit of *Primula Sieboldi* by Frederic J. Rea showed great improvement, and was awarded a Bronze Medal, and the exhibits of Cyrus Lothrop of *Laelia flava*, Anson Phelps Stokes of *Asparagus Sprengeri* var. *compactus*, and M. H. Walsh of a Hardy Climbing Rose, were awarded First Class Certificates of Merit and were all remarkable for fine cultivation.

March 30. Col. Charles Pfaff exhibited *Dendrobium fimbriatum* var. *oculatum*, receiving a Bronze Medal for the same, and the Harvard Botanic Garden received Honorable Mention for *Asparagus schoberioides*.

April 6. E. S. Converse (D. Roy, gardener) displayed eighteen plants of dwarf Hydrangeas in pots for which he was awarded a gratuity.

After April 6th we had no exhibits until August 24th, when Oakes Ames (R. M. Grey, gardener) sent in a new hybrid orchid, *Cypripedium* × *Boxallo-Rothschildianum*, a plant of European origin, for which a Bronze Medal was awarded.

CHRYSANTHEMUM SHOW.

November 7, 8, 9 and 10.

After August 24 nothing was shown until the Chrysanthemum Show which opened on November 7th and included plants for which prizes were offered at the delayed September shows.

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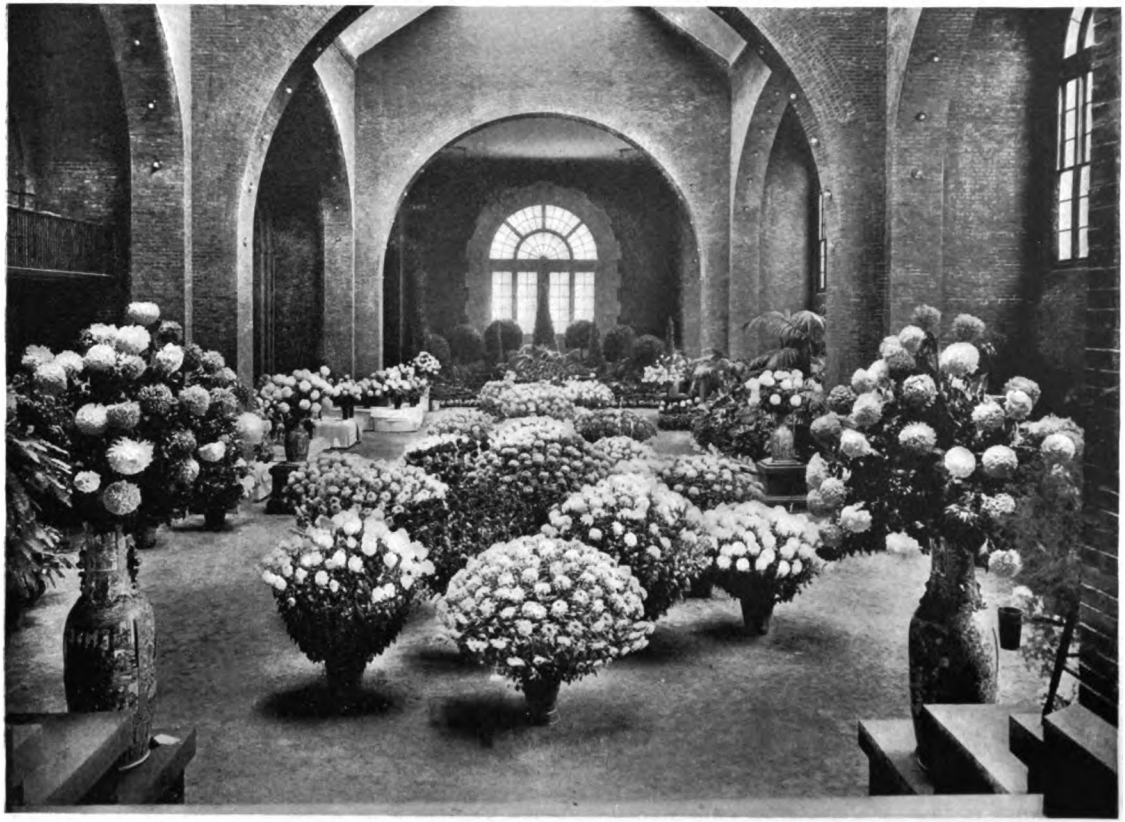

First Chrysanthemum Show in the New Building.

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This exhibition marked the opening of the new Hall by the Society and was a most gratifying success although made under the discouraging conditions prevailing in the new exhibition room.

The quality of the plants shown, as a whole, was never excelled here, and seldom equaled, although the interest in the extra large specimens seems to be falling off somewhat. It is correspondingly on the increase in the class for nine-inch pots and some very beautiful plants of this size were shown.

Mrs. B. P. Cheney, E. S. Converse, Walter Hunnewell, J. S. Bailey, Dr. C. G. Weld, and James Nicol were the principal exhibitors of Chrysanthemum plants in the various classes. The interesting classes for plants grown to one flower and stem were well competed for and included many fine specimens.

The first prize for twelve named plants went to Mrs. B. P. Cheney and the second to E. S. Converse.

Mrs. Cheney's plants were:

Kate Broomhead,
Louis Boehmer,
Miss Georgiana Pitcher,
Mrs. C. B. Freeman,
Mrs. F. A. Constable,
Mrs. J. G. Breer,
Mrs. J. Trainker,
Mutual Friend,
Peter Kay,
Shilowa,
Silver Cloud,
The Bard.

Mr. Converse's plants were:

Arethusa,
Edith Smith,
Golden Gate,
Jeannie Falconer,
Louis Boehmer,
Marion Henderson,
Mrs. C. B. Freeman,
Mrs. J. G. Breer,
Mrs. J. Lewis,
Red Warrior,
The Bard,
Theo.

For ten named plants in nine-inch pots, J. S. Bailey was first, Walter Hunnewell second, and E. S. Converse third.

Mr. Bailey's plants were:

Arethusa,
Casco,
Col. D. Appleton,
Golden Trophy,
Ivory,
John Shimpton,
Louis Boehmer,
Mrs. H. Robinson,
Mrs. J. Lewis,
Theo.

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Mr. Hunnewell's plants were:

Arethusa,	Mrs. H. Weeks,
Black Hawk,	Mrs. J. Lewis,
Defender,	Mutual Friend,
Edna,	Oriental Glory,
Kate Broomhead,	The Bard.

Mr. Converse's plants were:

Black Hawk,	Mrs. H. Weeks,
Ivory,	Mrs. J. G. Breer,
Louis Boehmer,	Mutual Friend,
Marion Henderson,	Red Warrior,
Mrs. C. B. Freeman,	The Bard.

Among the displays not in competition a very important addition to the exhibition was the one made by R. & J. Farquhar & Co. of Standard Bays, Palms, Araucarias and Begonia Gloire de Lorraine var. Caledonia. This display filled the entire rear end of the hall and made a welcome background for the other exhibits. R. & J. Farquhar & Co. also showed for the first time the variegated form of *Ficus repens* for which a First Class Certificate of Merit was awarded.

Lager & Hurrell of Summit, N. J., made an extensive display of orchids which were the centre of much interest throughout the exhibition.

Two other exhibits were worthy of more than passing notice, the magnificent collection of Gymnogrammas, silver and golden, from Charles Evans, and the pan of *Nerine flexuosa excellens* from Mrs. Cornelius Vanderbilt of Newport, R. I. (Robert Laurie, gardener). The former were very finely grown specimens in perfect condition, and the latter was a remarkably well-flowered specimen of this old but rare bulb, a representative of a very interesting but much neglected class of plants.

Mrs. John L. Gardner showed *Asparagus deflexus*, an interesting form in the way of *A. Sprengeri*, and received a First Class Certificate of Merit for it.

November 30. J. Tailby & Son of Wellesley, put on exhibition specimens of their Begonia Glory of Wellesley. This begonia is claimed to be a sport from the Gloire de Lorraine and was shown to us late last winter but not in condition to secure

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recognition. It was again shown on the above date, at our request, in much better condition, proving the plant to be a much stronger growing form than the original and with larger flowers. It received the award of a Silver Medal.

Amount appropriated for prizes and gratuities for 1901		$2000 00
Amount awarded for prizes and gratuities	$1199 00	
Estimated cost of medals awarded	61 00	1260 00
Leaving an unexpended balance of		$740 00

PRIZES AND GRATUITIES AWARDED FOR PLANTS. 1901.

JANUARY 5.

PRIMULA SINENSIS.—Six plants in not less than six-inch pots:

First, Mrs. John L. Gardner	$4 00
Second, Mrs. John L. Gardner	3 00
Third, Mrs. B. P. Cheney	2 00

PRIMULA STELLATA.—Six plants in not less than six-inch pots:

Second, Mrs. John L. Gardner	2 00

PRIMULA OBCONICA HYBRIDS.—Six plants in not less than six-inch pots:

First, Mrs. B. P. Cheney	4 00
Second, Mrs. B. P. Cheney	3 00
Third, Mrs. John L. Gardner	2 00

FEBRUARY 2.

FREESIAS. — Six pots or pans:

Second, H. Dumaresq	4 00

Gratuity:—

Mrs. B. P. Cheney, Twelve plants *Primula obconica*	5 00

FEBRUARY 16.

Gratuity:—

Harvard Botanic Garden, Display of Lachenalias and *Primula obconica*	8 00

FEBRUARY 23.

Gratuity:—

Harvard Botanic Garden, Thirty plants of seedling Cyclamen	8 00

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MARCH 9.

Gratuities:—

James Comley, Seedling Indian Azalea New Century	3 00
Bussey Institution, Display of Indian Azaleas, *Pyrus floribunda* var., and *Staphylea colchica*	4 00

SPRING EXHIBITION.

MARCH 19, 20, 21, AND 22.

Theodore Lyman Fund.

INDIAN AZALEAS.—Specimen plant, named:	
First, Edward Butler	$8 00
Second, Dr. C. G. Weld	6 00
Third, Dr. C. G. Weld	4 00

Society's Prizes.

ERICAS.—Six, not less than three species:	
First, Dr. C. G. Weld	6 00
ORCHID.—Single plant:	
First, Bayard Thayer	12 00
Second, Bayard Thayer	10 00
Third, Bayard Thayer	6 00
Fourth, Mrs. John L. Gardner	4 00
STOVE OR GREENHOUSE PLANT.—Specimen in bloom, other than Azalea or Orchid, named:	
First, Dr. C. G. Weld	8 00
Second, James Comley	6 00
HARDWOODED GREENHOUSE PLANTS.—Four, in bloom:	
First, Dr. C. G. Weld	10 00
Second, Dr. C. G. Weld	8 00
HARDY FLOWERING DECIDUOUS SHRUBS, FORCED.—Four, of four distinct species, named:	
First, Mrs. John L. Gardner	8 00
Second, Bussey Institution	5 00
HARDY PRIMROSES.—Twelve plants of distinct varieties:	
Third, Mrs. John L. Gardner	2 00
HARDY POLYANTHUSES.—Twelve plants of distinct varieties:	
Second, Dr. C. G. Weld	4 00
CYCLAMENS.—Ten plants:	
First, Mrs. B. P. Cheney	15 00
Second, J. S. Bailey	12 00
Ten plants, in not over seven-inch pots:	
First, Mrs. B. P. Cheney.	8 00

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Second, Mrs. B. P. Cheney	$6 00
Third, J. S. Bailey	4 00
Single plant:	
First, Mrs. B. P. Cheney	5 00
Second, H. H. Rogers	4 00
Third, H. H. Rogers	3 00
CINERARIAS.—Six varieties:	
First, Mrs. B. P. Cheney	10 00
Second, Mrs. John L. Gardner	8 00
Third, Dr. C. G. Weld	6 00
Three varieties:	
First, Mrs. John L. Gardner	6 00
Second, Mrs. B. P. Cheney	5 00
Third, Mrs. John L. Gardner	4 00
Single plant:	
First, Mrs. John L. Gardner	3 00
Second, H. H. Rogers	2 00
HYACINTHS.—Twelve named varieties in pots, one in each pot:	
First, Dr. C. G. Weld	8 00
Second, Mrs. John L. Gardner	5 00
Third, Bussey Institution	3 00
Six named varieties in pots, one in each pot:	
First, Dr. C. G. Weld	5 00
Second, Mrs. John L. Gardner	4 00
Third, Mrs. John L. Gardner	3 00
Single named bulb in pot:	
First, Bussey Institution	2 00
Second, Mrs. John L. Gardner	1 00
Three pans, not to exceed twelve inches, ten bulbs of one variety in each pan:	
First, Dr. C. G. Weld	6 00
Second, Dr. C. G. Weld	4 00
Third, Mrs. John L. Gardner	3 00
Two pans, not to exceed twelve inches, ten bulbs of one variety in each pan:	
First, Dr. C. G. Weld	4 00
Second, Mrs. John L. Gardner	3 00
Third, Bussey Institution	2 00
Single pan, not to exceed twelve inches, with ten bulbs of one variety:	
First, Mrs. John L. Gardner	3 00
Second, Bussey Institution	2 00
Third, Bussey Institution	1 00
TULIPS.—Six eight-inch pans, nine bulbs of one variety in each:	
First, Dr. C. G. Weld	6 00
Second, W. S. Ewell & Son	4 00
Third, W. S. Ewell & Son	2 00

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Three eight-inch pans, nine bulbs of one variety in each:
First, Dr. C. G. Weld 3 00
Second, W. S. Ewell & Son 2 00
Third, W. S. Ewell & Son 1 00
Three ten-inch pans, twelve bulbs of one variety in each:
First, Dr. C. G. Weld 5 00
Second, Dr. C. G. Weld 4 00
Third, W. S. Ewell & Son 3 00
Fourth, W. S. Ewell & Son 2 00

POLYANTHUS NARCISSUS.—Four seven-inch pots, four bulbs in each, distinct varieties:
First, Dr. C. G. Weld 4 00
Second, Dr. C. G. Weld 3 00
Third, Bussey Institution 2 00

JONQUILS.—Six pots or pans, not exceeding eight inches, the number of bulbs in each to be at the discretion of the grower:
First, W. S. Ewell & Son 4 00
Second, Dr. C. G. Weld 3 00
Third, W. S. Ewell & Son 2 00

NARCISSUSES.—Six eight-inch pans, distinct varieties, single or double:
First, Dr. C. G. Weld 6 00
Second, W. S. Ewell & Son 4 00
Third, Harry S. Rand 3 00
Three eight-inch pans:
First, W. S. Ewell & Son 3 00
Second, Dr. C. G. Weld 2 00

LILIUM LONGIFLORUM.—Four pots, not exceeding ten inches:
First, E. N. Peirce & Son 10 00
Second, E. N. Peirce & Son 8 00

LILY OF THE VALLEY.—Six pots or pans, not exceeding eight inches:
First, W. S. Ewell & Son 4 00
Second, Bussey Institution 3 00
Third, Bussey Institution 2 00

CROCUSES.— Three boxes, each eight by twenty inches, three distinct varieties:
First, W. S. Ewell & Son 3 00
Second, W. S. Ewell & Son 2 00
Third, Bussey Institution 1 00

IXIAS.—Six pots or pans, in varieties:
First, Dr. C. G. Weld 5 00

TRITONIAS.—Six pots or pans, in varieties:
First, Dr. C. G. Weld 5 00

ROMAN HYACINTHS.—Six eight-inch pans, ten bulbs in a pan:
First, W. S. Ewell & Son 4 00

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Second, W. S. Ewell & Son 2 00
Third, Bussey Institution 1 00

GENERAL DISPLAY OF SPRING BULBS.—All classes:
First, Dr. C. G. Weld 25 00
Second, W. S. Ewell & Son 20 00
Third, Bussey Institution 15 00

Gratuities:—

H. H. Rogers, Collection of Azaleas and Cyclamen . . . 5 00
Mrs. B. P. Cheney, Collection of Cyclamen 6 00
Mrs. John L. Gardner, Collection of Hyacinths 3 00
Hon. M. T. Stevens, Collection of Begonia Gloire de Lorraine . 5 00
James Comley, Display of Tricolor Geraniums . . . 2 00
I. G. Noyes, Collection of Cacti 2 00
Bussey Institution, Collection of Native Plants 5 00
Harvard Botanic Garden, Display 20 00

APRIL 6.

Gratuity:—

E. S. Converse, Display of eighteen plants of Dwarf Hydrangeas 8 00

CHRYSANTHEMUM SHOW.

NOVEMBER 7, 8, 9, AND 10.

☞ This was the opening exhibition held by the Society in its new halls and includes the postponed **Annual Exhibition of Plants and Flowers** and **Annual Exhibition of Fruits and Vegetables,** which were scheduled for September.

PALMS.—Pair, in pots or tubs, not more than twenty-four inches in diameter:
First, Mrs. John L. Gardner 12 00
Pair, in pots not more than fourteen inches in diameter:
First, Dr. C. G. Weld 8 00
Second, Mrs. John L. Gardner 6 00

GREENHOUSE PLANTS.—Collection containing foliage plants of all descriptions, not to exceed forty plants, in pots or tubs:
First, Mrs. John L. Gardner 45 00
Six Greenhouse and Stove Plants, of different named varieties, two Crotons admissible:
First, Mrs. John L. Gardner 25 00
Second, J. S. Bailey 20 00

TABLE DECORATION.—For fifteen covers, in one receptacle, only one entry admissible:
First, Edward J. Mitton 10 00

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FLOWERING GREENHOUSE PLANT.—Single specimen, named:
First, Dr. C. G. Weld 8 00
FERNS.—Specimen, other than Tree Fern:
First, James L. Little 4 00
Second, Charles Evans 3 00
DRACÆNAS.—Six named varieties:
First, J. S. Bailey 8 00
Second, Mrs. John L. Gardner 5 00
CROTONS.—Six named varieties, in not less than eight-inch pots:
First, J. S. Bailey 10 00
CYCAD.—Single plant, named:
First, Dr. C. G. Weld 10 00
CHRYSANTHEMUMS.—Display of twelve named plants, any or all classes, distinct varieties:
First, Mrs. B. P. Cheney 60 00
Second, E. S. Converse 50 00
Display of ten named plants, any or all classes, distinct varieties, in not exceeding nine-inch pots:
First, J. S. Bailey 30 00
Second, Walter Hunnewell 25 00
Third, E. S. Converse 20 00
Three Japanese Incurved:
First, Mrs. B. P. Cheney 12 00
Specimen Japanese Incurved, named variety:
First, Mrs. B. P. Cheney 6 00
Second, E. S. Converse 5 00
Specimen Reflexed, named variety.
First, E. S. Converse 6 00
Second, Mrs. B. P. Cheney 5 00
Third, E. S. Converse 4 00
Specimen Anemone Flowered, named variety:
First, Walter Hunnewell 6 00
Second, J. S. Bailey 5 00
Specimen Pompon, named variety:
First, E. S. Converse 4 00
Second, Mrs. B. P. Cheney 3 00
Twelve plants, of twelve different varieties, grown to one stem and bloom, in not over six-inch pots, preference being given to plants not more than three feet in height:
First, James Nicol 8 00
Second, Dr. C. G. Weld 6 00
Third, E. S. Converse 4 00
Fourth, R. C. Winthrop 2 00
Six plants grown as above but all of one color, Red:
First, James Nicol 4 00
Second, Dr. C. G. Weld 3 00
Third, E. S. Converse 2 00

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White:
First, James Nicol 4 00
Second, James Nicol 3 00
Third, Dr. C. G. Weld 2 00
Pink:
First, Dr. C. G. Weld 4 00
Second, Dr. C. G. Weld 3 00
Yellow:
First, James Nicol 4 00
Second, Dr. C. G. Weld 3 00
Third, Dr. C. G. Weld 2 00
Any other color:
First, Dr. C. G. Weld 4 00
Second, Dr. C. G. Weld 3 00
Third, R. C. Winthrop 2 00
Six plants grown to bush form, in not over eight-inch pots, without stakes:
Second, J. S. Bailey 6 00
Group of Chrysanthemums, arranged for effect, with palms and decorative foliage plants, limited to one hundred square feet:
First, Mrs. John L. Gardner 25 00

Gratuities:—

E. S. Converse, Eight plants Standard Chrysanthemums . . 16 00
Dr. C. G. Weld, Display of single stem Chrysanthemums . . 10 00
James Nicol, Single stem Chrysanthemums 3 00
Walter Hunnewell, three Chrysanthemum plants 5 00
Lager & Hurrell, Summit, N. J., Display of Orchids . . . 25 00
H. N. Eaton, Display of *Lilium Harrisii* 6 00
E. S. Converse, *Peristeria elata* 2 00
Dr. C. G. Weld, Display of Heaths 2 00
R. & J. Farquhar & Co., Display of Bay-trees, Palms, Araucarias and Begonia Caledonia 50 00
Charles Evans, Display of Gymnogrammas, silver and golden . 15 00
F. Skinner, Stag-horn Ferns 2 00
James Anderson, Crested Nephrolepis 1 00

SOCIETY'S SILVER GILT MEDALS.

January 26. Henry T. Clinkaberry, Trenton, N. J., for *Cypripedium* × *Aylingii* var. *Washingtonianum* (*C. ciliolare*, giant var. × *C. niveum grandiflorum*).

February 16. Mrs. F. L. Ames, for collection of Dendrobiums:
D. Ainsworthii (type), *D. nobile* var. *Arnoldianum*,
" " var. *roseum*, " " " *Backhouseanum*,
" *Amesianum*, " " " *Cooksoni*.

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D. Amesianum, var. *grandiflorum*,
" *chrysodiscus*,
" *Cybele*,
" *Dulce*,
" *euosmum*,
" *nobile*,
D. nobile var. *majus*,
" " " *nobilius*,
" " " *virginale*,
" *Robinsonianum*,
" *Schneiderianum giganteum*,
" *splendidissimum grandiflorum*.

SOCIETY'S SILVER MEDALS.

February 2. R. & J. Farquhar & Co., for Begonia Gloire de Lorraine var *nana compacta*.

February 9. Walter P. Winsor, for *Dendrobium nobile* var. *Burfordiense*.

" 16. Mrs. F. L. Ames, for *Dendrobium nobile Backhouseanum*.

" " Mrs. F. L. Ames, for *Dendrobium Cybele*.

November 30. J. Tailby & Son, for Begonia Glory of Wellesley.

December 21. Henry T. Clinkaberry, for *Laelio-Cattleya Cappei* var. *Intensity* (*C. Warscewiczii* var. *Lagerii* × *L. cinnabarina*), the second prize for American Seedling Orchid, other than Cypripedium, exhibited by the originator.

SOCIETY'S BRONZE MEDALS.

Spring Exhibition, March 19–22. Frederic J. Rea, for collection of *Primula Sieboldi*, sixteen varieties.

March 30. Col. Charles Pfaff, for *Dendrobium fimbriatum* var. *oculatum*.

August 24. Oakes Ames, for new Hybrid Orchid, *Cypripedium* × *Boxallo-Rothschildianum*.

FIRST CLASS CERTIFICATES OF MERIT.

January 5. Oakes Ames, for *Cypripedium* × *James A. Garfield* (*C. tonsum* var. *superbum* × *C. regale*).

January 12. C. G. Roebling, Trenton, N. J., for new seedling *Cypripedium* × *Hera* var. *Trenton* (*C. Leeanum* var. *Masreelianum* × *C. Boxalli*).

February 2. C. G. Roebling, for *Cypripedium* × *tessellatum* var. *Harrisianum*.

February 16. Mrs. F. L. Ames, for *Dendrobium chrysodiscus*.

" " Mrs. F. L. Ames, for *Dendrobium Schneiderianum giganteum*.

" " Mrs. F. L. Ames, for *Dendrobium Amesianum* var. *grandiflorum*.

" " Walter Angus, for Superior Cultivation of Begonia Gloire de Lorraine.

" " Harvard Botanic Garden (Robert Cameron, gardener), for Superior Cultivation of *Primula stellata* var. *alba*.

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March 2. Oakes Ames, for *Coleus thyrsoideus.*

Spring Exhibition, March 19–22. Cyrus Lothrop (H. Cole, gardener), for Superior Cultivation of *Lælia flava.*

" " " " Anson Phelps Stokes, for *Asparagus Sprengeri* var. *compactus.*

" " " " M. H. Walsh, for Hardy Hybrid Climbing Rose Sweetheart.

Chrysanthemum Show, November 7–10. Mrs. John L. Gardner, for *Asparagus deflexus.*

" " " " Mrs. Cornelius Vanderbilt, for *Nerine flexuosa excellens.*

" " " " R. & J. Farquhar & Co., for *Ficus repens variegata.*

HONORABLE MENTION.

January 5. J. E. Rothwell, for *Cypripedium Longwoodense* (*C. Leeanum* var. *Masreelianum* × *C. Charlesworthii*).

" " Oakes Ames, for *Cypripedium James K. Polk* (*C. Chamberlainianum* × *C. niveum*).

" 12. Oakes Ames, for *Cypripedium* × *Chapmanii* (*C. Curtisii* × *C. bellatulum*).

" " J. E. Rothwell, for *Cypripedium* × *H. Graves, Jr.* (*C. Lawrenceanum* × *C. Marshallianum*).

February 16. Harvard Botanic Garden, for *Primula stellata* var. *compacta.*

" 23. Mrs. John L. Gardner, for Seedling Asparagus.

Spring Exhibition, March 19–22. Mrs. Warren H. Heustis, for Superior Cultivation of *Oxalis rosea.*

March 30. Harvard Botanic Garden, for *Asparagus schoberioides.*

Chrysanthemum Show, November 7–10. George McWilliam, for Heliconia Sport.

December 21. J. E. Rothwell, for Seedling Orchid, *Cattleya intermedia* × *Lælia cinnabarina.*

ARTHUR H. FEWKES,
JAMES WHEELER,
WM. J. MARTIN,
ROBERT CAMERON,
ROBERT MELROSE GREY,
} *Committee on Plants.*

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REPORT

OF THE

COMMITTEE ON FLOWERS

FOR THE YEAR 1901.

By J. WOODWARD MANNING, CHAIRMAN.

The Report of the Flower Committee for the year 1901 must of necessity be short, owing to the lack of exhibits throughout the year.

Such exhibits as could be held were very creditable and attracted the usual amount of attention. Unfortunately, the Rose, Pæony and Dahlia Shows, which have interested the public so largely in the last few years, could not be held, but we have every reason to believe that there would have been very creditable exhibits in this line had there been opportunity to enter such.

The Spring Exhibition was rich in its display of forced Roses and Carnations.

The Chrysanthemum Show showed an advance in the careful culture of these beautiful flowers and proved that the limit of perfection was elastic and that what seemed impossible of improvement yet continued to show further excellence. A large number of new exhibitors made displays at this exhibition and the competition was even closer than it has been in past years. There seems to be no indication of lack of popularity in this flower this year.

With the added facilities that our new hall affords it would seem that we should be able to give the exhibitors the full allowance of room that is necessary that they may be able to display their exhibits to the best advantage, and also to enable the public to gain free access for the enjoyment of such exhibits.

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We are hoping that the following year we shall be able to report the great improvement in display, as well as added interest on the part of the public, that would seem called for in view of the greatly increased facilities we now have for future exhibits.

Your Committee has awarded prizes to the money value of $979.00 during the year, leaving a balance of $1521.00 from which should be deducted the necessary amount to pay for the four Silver Medals, the three Silver Gilt Medals, two Bronze Medals and seven First Class Certificates of Merit.

PRIZES AND GRATUITIES AWARDED FOR FLOWERS.

1901.

JANUARY 5.

PRIMULA SINENSIS.— Display of fifty or more individual blooms:	
First, Mrs. John L. Gardner	$2 00
Second, Mrs. John L. Gardner	1 00
FREESIAS.— Vase of fifty spikes:	
First, Mrs. E. M. Gill	2 00
Gratuities: —	
J. E. Rothwell, Display of Cypripediums	2 00
Mrs. E. M. Gill, Display	1 00

FEBRUARY 2.

VIOLETS.— Best collection of varieties, in bunches of fifty blooms each:	
First, Norris F. Comley	4 00
Second, Norris F. Comley	3 00
CARNATIONS.— Display of cut blooms, with foliage, not less than six varieties:	
First, M. A. Patten	8 00
Third, Miss Hattie B. Winter	4 00
CAMELLIAS.— Display of named varieties, cut flowers with foliage, not less than twelve blooms, in not less than six varieties:	
First, James Comley	4 00
Second, James Comley	3 00
Gratuities:—	
James Comley, Camellias	4 00
J. W. Howard, Camellias	3 00
W. J. Clemson, Two vases Freesias	2 00
Mrs. E. M. Gill, Display	2 00

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FEBRUARY 9.

Gratuities:—

James Comley, Camellias	5 00
Mrs. E. M. Gill, Display	1 00

FEBRUARY 16.

Gratuity:—

James Comley, Display	6 00

FEBRUARY 23.

Gratuities:—

James E. Rothwell, Display of Orchids	1 00
Norris F. Comley, Violets	1 00
James Comley, Camellias	5 00
Mrs. E. M. Gill, Display	1 00

MARCH 2.

Gratuities:—

John L. Bird, *Acacia pubescens*	1 00
Mrs. E. M. Gill, Display	1 00

MARCH 9.

Gratuities:—

James Comley, Basket of Camellias	3 00
Mrs. E. M. Gill, Display	1 00

SPRING EXHIBITION.

MARCH 19, 20, 21 AND 22.

HYBRID PERPETUAL ROSES.— Twelve blooms, in not less than four named varieties:	
First, Mrs. A. W. Spencer	12 00
Six blooms, not less than three named varieties:	
First, Col. Charles Pfaff	6 00
Second, Mrs. A. W. Spencer	5 00
Twelve blooms of Ulrich Brunner:	
First, E. M. Wood & Co.	10 00
Second, John McFarland	8 00
TENDER ROSES, IN VASES.— Twelve blooms of American Beauty:	
First, E. M. Wood & Co.	15 00
Second, Exeter Rose Conservatories, Exeter, N. H.	12 00
Third, Briar Cliff Greenhouses, Scarboro, N. Y.	10 00

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Twenty-five blooms of The Bride:	
First, E. M. Wood & Co.	10 00
Second, John Pritchard	8 00
Third, W. H. Elliott	6 00
Twenty-five blooms of Bridesmaid:	
First, E. M. Wood & Co.	10 00
Second, John Pritchard	8 00
Third, W. H. Elliott	6 00
Twenty-five blooms of Meteor:	
First, W. H. Elliott	10 00
Twenty-five blooms of Souvenir de Président Carnot:	
First, W. H. Elliott	10 00
Twenty-five blooms of Liberty:	
First, E. M. Wood & Co.	12 00
Second, W. H. Elliott	8 00
CARNATIONS.— Vase of one hundred cut blooms, with foliage, not less than six varieties:	
First, M. A. Patten	8 00
Second, Peter Fisher	6 00
Third, Col. Charles Pfaff	4 00
Twenty-five blooms of any named Crimson variety:	
Second, Briar Cliff Greenhouses, for Gen. Maceo	2 00
Twenty-five blooms of any named Dark Pink variety, (William Scott or darker):	
First, Peter Fisher, for Mrs. Thomas W. Lawson	3 00
Second, Briar Cliff Greenhouses, for Mrs. Thomas W. Lawson	2 00
Twenty-five blooms of any named Light Pink variety, (Lighter than William Scott):	
Second, Briar Cliff Greenhouses, for Maud Dean	2 00
Twenty-five blooms of any named Scarlet variety:	
First, Briar Cliff Greenhouses, for G. H. Crane	3 00
Twenty-five blooms of any named White variety:	
First, Briar Cliff Greenhouses, for White Cloud	3 00
Twenty-five blooms of any named Yellow Variegated variety:	
First, Briar Cliff Greenhouses, for Gold Nugget	3 00
Second, S. J. Goddard, for Eldorado	2 00
Twenty-five blooms of any named White Variegated variety:	
First, Briar Cliff Greenhouses, for G. M. Bradt	3 00
VIOLETS.—Bunch of one hundred blooms of Lady Hume Campbell:	
First, D. T. Harrigan	3 00
Second, Norris F. Comley	2 00
Bunch of one hundred blooms of Marie Louise:	
First, Harry S. Rand	3 00
Second, Norris F. Comley	2 00
Bunch of one hundred blooms of any other double variety:	
First, Norris F. Comley	3 00

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Bunch of one hundred blooms of any single variety:

First, William Sim	3 00
Second, William Sim	2 00

Gratuities:—

Col. Charles Pfaff, Magna Charta Roses	8 00
The Floral Exchange, Inc., Philadelphia, Pa., Vase of Rose Queen of Edgely	5 00
Miss M. S. Walker, Vase of Roses	8 00
Col. Charles Pfaff, Display of Roses	3 00
Charles Evans, Mignonette	2 00
C. H. Souther, Vase of Antirrhinums	1 00
Norris F. Comley, Lilacs	2 00
Mrs. E. M. Gill, Basket of Flowers	3 00
James Comley, Display	6 00
Mrs. A. W. Spencer, Display	6 00
Mrs. E. M. Gill, "	2 00

MARCH 30.

Gratuity:—

O. B. Hall, Seedling Petunias	1 00

CHRYSANTHEMUM SHOW.

NOVEMBER 5, 6, 7 AND 8.

☞ This was the opening exhibition held by the Society in its new halls and includes the postponed **Annual Exhibition of Plants and Flowers** and **Annual Exhibition of Fruits and Vegetables,** which were scheduled for September.

Special Prizes.

Josiah Bradlee Fund.

CHRYSANTHEMUMS.— Twenty-five blooms, of twenty-five distinct varieties, named, a piece of plate or value in money:

First, Mrs. B. P. Cheney	$18 00
Second, Miss E. J. Clark	12 00
Third, Col. Charles Pfaff	8 00
Fourth, Robert Laurie	6 00

Six vases, of six named varieties, ten blooms each:

First, Mrs. A. W. Spencer	30 00
Second, Mrs. B. P. Cheney	25 00
Third, Miss E. J. Clark	20 00
Fourth, Waban Rose Conservatories	15 00

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Henry A. Gane Memorial Fund.

Best twelve specimen blooms of any of the Seedling Chrysanthemums originated by the late Henry A. Gane:	
First, Waban Rose Conservatories	20 00
Second, Mrs. A. W. Spencer	10 00

Society's Prizes.

Twelve blooms, Incurved, named, in vases:	
First, E. S. Converse	8 00
Twelve blooms, Japanese, named, in vases:	
First, Mrs. B. P. Cheney	10 00
Twelve blooms, Japanese Incurved, named, in vases:	
First, Mrs. B. P. Cheney	10 00
Second, Peter B. Robb	6 00
Third, Col. Charles Pfaff	4 00
Twelve blooms, Anemone, named, in vases:	
First, E. S. Converse	8 00
Second, Dr. C. G. Weld	6 00
Third, C. H. Souther	4 00
Six blooms, Incurved, named, in vases:	
First, Dr. C. G. Weld	5 00
Second, E. S. Converse	4 00
Third, C. H. Souther	2 00
Six blooms, Japanese, named, in vases:	
First, Mrs. B. P. Cheney	6 00
Second, Peter B. Robb	4 00
Third, E. S. Converse	2 00
Six blooms, Japanese Incurved, named, in vases:	
First, Mrs. B. P. Cheney	6 00
Second, Col. Charles Pfaff	4 00
Third, E. S. Converse	2 00
Six blooms, Reflexed, named, in vases:	
First, Mrs. B. P. Cheney	6 00
Second, Peter B. Robb	4 00
Third, E. S. Converse	2 00
Six blooms, Anemone, named, in vases:	
First, E. S. Converse	5 00
Second, E. S. Converse	4 00
Vase of ten blooms on long stems, Pink, named:	
First, Mrs. A. W. Spencer, for Viviand Morel	10 00
Second, Robert Laurie	8 00
Third, C. D. Sias	6 00
Vase of ten blooms on long stems, Red, named:	
First, Mrs. A. W. Spencer	10 00
Second, Miss E. J. Clark	8 00
Third, Col. Charles Pfaff	6 00

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Vase of ten blooms on long stems, White, named:	
First, Mrs. A. W. Spencer	10 00
Second, Peter B. Robb	8 00
Third, Robert Laurie	6 00
Vase of ten blooms on long stems, Yellow, named:	
First, Mrs. A. W. Spencer	10 00
Second, Robert Laurie	8 00
Third, Col. Charles Pfaff	6 00
Vase of ten blooms on long stems, any other color:	
First, Mrs. A. W. Spencer	10 00
Second, Robert Laurie	8 00
Third, Miss E. J. Clark	6 00
Vase of blooms on long stems, arranged in the Society's large China vases; prizes to be repeated every day during the exhibition:	
First, Col. Charles Pfaff	10 00
Second, Mrs. A. W. Spencer	9 00
Third, E. N. Peirce & Sons	8 00
Fourth, Norris F. Comley	7 00
DAHLIAS.— Cactus, twelve blooms, named varieties:	
First, W. H. Symonds	4 00
Decorative, twelve blooms, named varieties:	
First, W. H. Symonds	4 00
Show, six blooms, named varieties:	
First, W. H. Symonds	2 00
Second, W. H. Symonds	1 00
Fancy, six blooms, named varieties:	
First, W. H. Symonds	2 00
General Display, one hundred or more bottles, in the Society's racks, arranged for effect:	
First, W. H. Symonds	12 00

Gratuities:—

E. S. Converse, Display of Plumed Chrysanthemums	2 00
Mrs. E. M. Gill, Display of Pompon Chrysanthemums	1 00
Mrs. E. M. Gill, Display of Chrysanthemums	5 00
Mrs. A. W. Spencer, Three Vases of Chrysanthemums	3 00
Mrs. A. W. Spencer, Two Vases of Chrysanthemums	6 00
Carl Jurgens, Vase of twenty-five American Beauty Roses	10 00
John N. May, Rose of Mrs. Oliver Ames	2 00
M. A. Patten, Display of Carnations	8 00
James Comley, Display	8 00
John Thomas, Display	4 00
Blue Hill Nursery, Display	2 00

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AWARDS OF NOVEMBER 8.

CHRYSANTHEMUMS.—Vase of blooms on long stems, arranged in the Society's large China vases:

First, Mrs. A. W. Spencer	10 00
Second, Col. Charles Pfaff	9 00
Third, E. N. Peirce & Sons	8 00
Fourth, Norris F. Comley	7 00

Gratuities:—

Col. Charles Pfaff, Display of Orchids	3 00
Mrs. B. P. Cheney, Display	8 00

AWARDS OF NOVEMBER 9.

CHRYSANTHEMUMS.—Vase of blooms on long stems, arranged in the Society's large China vases:

First, Col. Charles Pfaff	10 00
Second, Mrs. A. W. Spencer	9 00
Third, E. N. Peirce & Sons	8 00
Fourth, Norris F. Comley	7 00

VIOLETS.—Single, collection of varieties, fifty blooms each:

First, Norris F. Comley	5 00

Double, collection of varieties, fifty blooms each:

First, Norris F. Comley	5 00

AWARDS OF NOVEMBER 10.

CHRYSANTHEMUMS.—Vase of blooms on long stems, arranged in the Society's large China vases:

First, Col. Charles Pfaff	10 00
Second, Mrs. A. W. Spencer	9 00
Third, E. N. Peirce & Sons	8 00
Fourth, Norris F. Comley	7 00

VASE OF FLOWERS.—For table decoration, on the last day of the exhibition:

First, Mrs. E. M. Gill	4 00
Second, Miss Hattie B. Winter	3 00

SILVER GILT MEDALS.

February 2. Oakes Ames, first prize for Display of Orchids, named species and varieties, filling not less than twenty bottles.

Spring Exhibition, March 19–22. Mrs. F. L. Ames, first prize for Display of Orchids, named species and varieties, filling not less than twenty bottles.

Chrysanthemum Show, November 7–10. James E. Rothwell, first prize for Display of Orchids, named species and varieties, filling not less than twenty bottles.

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SOCIETY'S SILVER MEDALS.

Spring Exhibition, March 19–22. James E. Rothwell, second prize for Display of Orchids, named species and varieties, filling not less than twenty bottles.

" " " " Anson Phelps Stokes, for Climbing Rose, Gold or Ophir.

Chrysanthemum Show, November 7–10. James Comley, for Pompon Chrysanthemums.

" " " " Col. Charles Pfaff, for largest number of first prizes for Vase of Chrysanthemums.

BRONZE MEDALS.

October 5. George McWilliam, for *Lælio-Cattleya* × *Catherine L. Whitin* var. *inversum*, and *Cattleya Harrisonii* × *Lælia purpurata*, Seedling.

Chrysanthemum Show, November 7–10. Mrs. A. W. Spencer, for largest number of second prizes for Vase of Chrysanthemums.

FIRST CLASS CERTIFICATES OF MERIT.

January 12. Harvard Botanic Garden, for *Euphorbia pulcherrima plenissima*.

" 26. H. T. Clinkaberry, Trenton, N. J., for *Cypripedium Thayerianum Trenton* var. (*C. Lawrenceanum* Pitcher's var. × *Boxallii atratum*).

" " H. T. Clinkaberry, for *Cypripedium Garret A. Hobart*, (*C. Chantinii* × *C. Lathamianum*).

" " H. T. Clinkaberry, for *Cypripedium Leeanum Mrs. Clinkaberry*, *Leeanum* var.

Chrysanthemum Show, Nov. 7–10. Peter Fisher, for Carnation Governor Wolcott.

" " " " Peter Fisher, for Carnation Nelson Fisher.

" " " " Albert Roper, for Carnation Fair Maid

HONORABLE MENTION.

January 5. J. E. Rothwell, for *Cypripedium Niobe* (*C. Spicerianum* × *C. Fairieanum*).

February 16. Harvard Botanic Garden, for *Bougainvillea speciosa* var. *splendens*.

Chrysanthemum Show, November 7–10. Peter Fisher, for Carnation Evangeline.

" " " " Peter Fisher, for Carnation Mrs. M. A. Patten

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Chrysanthemum Show, November 7-10.	Peter Fisher, for Carnation Enchantress.
" " " "	D. Carmichael, for Carnation Symphony.

J. WOODWARD MANNING,
MICHAEL H. NORTON,
KENNETH FINLAYSON,
FREDERICK S. DAVIS,
JAMES COMLEY,
} *Committee on Flowers.*

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REPORT

OF THE

COMMITTEE ON FRUITS

FOR THE YEAR 1901.

By E. W. WOOD, CHAIRMAN.

The fruits in general cultivation in New England passed the winter of 1900–1901 with comparatively little injury. The peach buds in some localities were injured more or less, but generally there were enough live buds left to produce a fair crop and the southern fruit was supplemented by an unusual amount of native fruit.

The apple crop was almost an entire failure; there was more than the usual amount of bloom for the off year but the continued cold wet weather prevented fertilization of the blossoms and the set of fruit was exceedingly light. The conditions have been favorable for a vigorous growth of the trees the past season, and barring unfavorable conditions at the time of blooming, an abundant crop may be expected the coming year.

It is conceded by intelligent fruit growers that there is no place where the pear can be grown more successfully than in the vicinity of Boston. The exhibitions of this fruit have continued to improve in quality since the change in the schedule. Instead of giving prizes for collections of twenty, fifteen and ten varieties the premiums are awarded for single dishes being more in number and larger in amount for the more desirable varieties. Among growers for market the varieties are closely confined to six or eight, several others being added for the home garden to furnish a continuous supply during the season.

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Owing to the obligation to vacate the Society's building on Tremont Street and the delay in completing the present building, the Strawberry exhibition and the Summer exhibits of the small fruits were omitted the past season. The scheduled exhibition for November 7th was the first fruit exhibit in the new building and the Society has never had a finer show of late fall and winter fruits. Apples were limited in quantity but were good in quality. There was a large display of pears and many exceptionally fine specimens.

The appropriation for the Fruit Committee was seventeen hundred dollars; there have been awarded in premiums and gratuities six hundred and fifty-six dollars, leaving an unexpended balance of ten hundred and forty-four dollars.

PRIZES AND GRATUITIES AWARDED FOR FRUITS.

1901.

SPRING EXHIBITION.

MARCH 19, 20, 21 AND 22.

WINTER APPLES.— Baldwin:	
First, E. M. Bruce	$3 00
Second, C. F. Boyden	2 00
Third, W. H. Boyden	1 00
Northern Spy:	
First, Hiram Heyworth	3 00
Second, C. F. Boyden	2 00
Third, E. M. Bruce	1 00
Roxbury Russet:	
First, W. H. Boyden	3 00
Second, H. R. Kinney	2 00
Third, A. E. Hartshorn	1 00
Tompkins King:	
First, C. F. Boyden	3 00
Second, F. J. Kinney	2 00
Third, E. M. Bruce	1 00
Any other variety:	
First, E. M. Bruce, Sutton	3 00
Second, A. E. Hartshorn, Sutton	2 00
Third, F. J. Kinney, Palmer	1 00

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WINTER PEARS.—Any variety:
First, George V. Fletcher, Dana's Hovey 3 00
Second, George V. Fletcher, Anjou 2 00
STRAWBERRIES.— One pint:
First, Francis Blake 3 00

Gratuity:—
George C. Rice, Collection of Apples 1 00

CHRYSANTHEMUM EXHIBITION.

NOVEMBER 7, 8, 9 AND 10.

☞ This was the opening exhibition held by the Society in its new halls and includes the postponed **Annual Exhibition of Plants and Flowers** and **Annual Exhibition of Fruits and Vegetables**, which were scheduled for September.

Special Prizes.

Theodore Lyman Fund.

For the heaviest and best ripened bunch of any Foreign Black Grape:
First, George McWilliam, Gros Guillaume $15 00
Second, George McWilliam, Black Alicante 10 00

Society's Prizes.

FOREIGN GRAPES.—Two bunches Black Alicante:
First, George McWilliam 5 00
Lady Downes:
First, George McWilliam 5 00
Any other variety:
First, George McWilliam 5 00
Second, Mrs. John C. Whitin 4 00

Special Prizes.

Samuel Appleton Fund.

APPLES.—Baldwin, E. F. Locke 5 00
Hubbardston, Artemas Frost 5 00
PEARS.—Bosc, F. W. Damon 5 00
Sheldon, George V. Fletcher 5 00

Benjamin V. French Fund.

APPLES.—Gravenstein, Warren Fenno 5 00
Rhode Island Greening, A. E. Hartshorn 5 00

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Marshall P. Wilder Fund.

PEARS.—Anjou:	
First, A. T. Brown	4 00
Second, F. W. Damon	3 00
Third, A. K. Gould	2 00
Fourth, Warren Fenno	1 00
Bartlett:	
First, George V. Fletcher	4 00
Second, Varnum Frost	3 00
Third, J. L. Bird	2 00
GRAPES.—Concord, twelve bunches:	
First, C. F. Hayward	4 00
Second, E. E. Lincoln	3 00
Third, H. R. Kinney	2 00
Worden:	
First, H. R. Kinney	4 00
Second, J. S. Chase	3 00

Theodore Lyman Fund.

APPLES.—Baldwin:	
First, Warren Fenno	4 00
Second, J. C. Stone	3 00
Third, C. H. Teele	2 00
Fletcher Russet:	
First, George V. Fletcher	3 00
Gravenstein:	
First, L. B. Dodge	4 00
Second, J. B. Shurtleff, Jr.	3 00
Third, Mrs. A. E. Underwood	2 00
Hubbardston:	
First, E. F. Locke	4 00
Second, Artemas Frost	3 00
Third, Warren Fenno	2 00
Hunt Russet:	
First, William H. Hunt	3 00
Second, W. H. Teele	2 00
Mackintosh:	
First, George C. Rice	4 00
Second, George V. Fletcher	3 00
Third, H. K. W. Hall	2 00
Maiden's Blush:	
First, H. R. Kinney	3 00
Mother:	
First, Ellwanger & Barry	3 00

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Northern Spy:	
First, J. Fletcher Stott	3 00
Second, George V. Fletcher	2 00
Third, George C. Rice	1 00
Porter:	
First, Mrs. A. E. Underwood	3 00
Second, M. W. Chadbourne	2 00
Pound Sweet:	
First, George C. Rice	3 00
Second, George V. Fletcher	2 00
Rhode Island Greening:	
First, Warren Fenno	4 00
Second, H. R. Kinney	3 00
Third, A. E. Hartshorn	2 00
Roxbury Russet:	
First, A. E. Hartshorn	4 00
Second, H. R. King	3 00
Third, H. R. Kinney	2 00
Sutton:	
First, A. E. Hartshorn	3 00
Tolman's Sweet:	
First, Artemas Frost	3 00
Second, Mrs. A. E. Underwood	2 00
Third, H. W. Anderson	1 00
Tompkins King:	
First, Oliver B. Wyman	3 00
Second, P. W. Costain	2 00
Third, George C. Rice	1 00
Washington Royal:	
Second, H. R. King	2 00
Third, A. E. Hartshorn	1 00
Wealthy:	
Third, George C. Rice	1 00
Any other variety:	
First, George C. Rice, Fallawater	3 00
CRAB APPLES.—Hyslop, twenty-four specimens:	
First, M. W. Chadbourne	2 00
Second, A. E. Hartshorn	1 00
Any other variety:	
First, S. H. Warren	2 00

Special Prizes offered by the Society.

PEARS.—Anjou, A. K. Gould	5 00
NATIVE GRAPES.—Twelve bunches, any variety, H. R. Kinney	5 00

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Regular Prizes.

PEARS.—Angouleme:

First, A. T. Brown	4 00
Second, F. W. Damon	3 00
Third, Elbridge Torrey	2 00
Fourth, Warren Fenno	1 00

Bosc:

First, J. B. Shurtleff, Jr.	4 00
Second, A. T. Brown	3 00
Third, F. W. Damon	2 00
Fourth, Charles W. Libbey	1 00

Clairgeau:

First, Charles F. Curtis	3 00
Second, Warren Heustis & Son	2 00
Third, F. W. Damon	1 00

Comice:

First, Warren Fenno	3 00

Dana's Hovey:

First, A. T. Brown	4 00
Second, F. W. Damon	3 00
Third, Warren Fenno	2 00
Fourth, Warren Heustis & Son	1 00

Diel:

First, A. T. Brown	3 00
Second, J. C. Stone	2 00
Third, Warren Fenno	1 00

Fulton:

First, E. S. Converse	3 00
Second, Warren Fenno	2 00
Third, J. L. Bird	1 00

Hardy:

First, Warren Fenno	3 00

Howell:

First, Warren Fenno	3 00

Josephine of Malines:

First, Warren Fenno	3 00

Lawrence:

First, A. T. Brown	3 00
Second, Warren Fenno	2 00
Third, F. W. Damon	1 00

Louise Bonne of Jersey:

First, Warren Fenno	3 00

Marie Louise:

First, Elbridge Torrey	3 00
Second, A. T. Brown	2 00
Third, Warren Fenno	1 00

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Merriam:	
First, Charles E. Swain	3 00
Second, Warren Heustis & Son	2 00
Third, Warren Fenno	1 00
Onondaga:	
First, Warren Fenno	3 00
Second, J. L. Bird	2 00
Third, Charles B. Travis	1 00
Seckel:	
First, A. T. Brown	4 00
Second, Mrs. Charles Whittier	3 00
Third, F. W. Damon	2 00
Sheldon:	
First, Elbridge Torrey	4 00
Second, A. T. Brown	3 00
Third, George E. Freeman	2 00
Superfin:	
First, Warren Fenno	3 00
Urbaniste:	
First, A. T. Brown	3 00
Second, J. L. Bird	2 00
Third, M. W. Chadborune	1 00
Vicar:	
First, A. T. Brown	3 00
Winter Nelis:	
First, A. T. Brown	3 00
Second, Warren Fenno	2 00
Any other variety:	
First, Warren Fenno, Pratt	3 00
Second, Warren Fenno, St. Michael Archangel	2 00
Third, Elbridge Torrey, Bezi de la Motte	1 00
QUINCES.—Champion:	
First, L. F. Priest	3 00
Second, Charles S. Smith	2 00
Third, J. S. Chase	1 00
Orange:	
First, George V. Fletcher	3 00
Second, Warren Fenno	2 00
Pear:	
First, George V. Fletcher	3 00
Rea:	
First, J. S. Chase	3 00
Second, I. H. Locke	2 00
Any other variety:	
First, J. S. Chase, Meech	3 00
PLUMS.—Any variety:	
First, H. R. Kinney	2 00

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NATIVE GRAPES.—Six bunches of Brighton:

First, Charles W. Libbey	3 00
Second, H. R. Kinney	2 00
Third, J. S. Chase	1 00
Delaware:	
First, Charles W. Libbey	4 00
Second, J. S. Chase	3 00
Third, H. R. Kinney	2 00
Eumelan:	
Second, J. S. Chase	2 00
Herbert:	
First, Charles W. Libbey	3 00
Second, J. S. Chase	2 00
Lindley:	
First, Charles W. Libbey	3 00
Niagara:	
First, C. F. Hayward	3 00
Pocklington:	
First, H. R. Kinney	4 00
Second, J. S. Chase	3 00
Third, Charles W. Libbey	2 00
Prentiss:	
First, J. S. Chase	3 00
Any other variety:	
First, Charles W. Libbey, Moore's Diamond	3 00
Second, H. R. Kinney, Salem	2 00
Third, J. S. Chase, Diana	1 00
FOREIGN GRAPES.— Two bunches of any variety, cold house culture:	
First, E. S. Converse	5 00
CRANBERRIES.—Half-peck:	
First, L. J. Fosdick	3 00
Second, Charles P. Trowbridge	2 00
Third, A. L. Plimpton	1 00

Benjamin V. French Fund.

APPLES. —Baldwin, A. E. Hartshorn	5 00
Rhode Island Greening, George V. Fletcher	5 00

Society's Prizes.

APPLES. —Baldwin:	
First, F. O. Barrett	3 00
Second, Warren Fenno	2 00
Third, C. H. Teele	1 00
Danvers Sweet:	
First, Warren Fenno	3 00

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Fletcher Russet:	
First, George V. Fletcher	3 00
Second, Charles F. Curtis	2 00
Hubbardston:	
First, M. W. Chadbourne	3 00
Second, A. E. Hartshorn	2 00
Third, Warren Fenno	1 00
Northern Spy:	
First, C. W. Morrill	3 00
Second, George C. Rice	2 00
Third, Warren Fenno	1 00
Rhode Island Greening:	
First, Mrs. A. E. Underwood	3 00
Second, A. E. Hartshorn	2 00
Third, H. R. King	1 00
Roxbury Russet:	
First, E. S. Converse	3 00
Second, A. E. Hartshorn	2 00
Third, George V. Fletcher	1 00
Tolman's Sweet:	
First, George V. Fletcher	3 00
Second, Mrs. A. E. Underwood	2 00
Tompkins King:	
First, George C. Rice	3 00
Second, A. E. Hartshorn	2 00
Any other variety:	
First, Mrs. A. E. Underwood, Bellflower	3 00
Second, M. Martin, Bellflower	2 00
Third, A. E. Hartshorn, Sutton	1 00
PEARS. — Angouleme:	
First, Warren Fenno	4 00
Second, A. T. Brown	3 00
Third, J. L. Bird	2 00
Fourth, Edwin A. Hall	1 00
Anjou:	
First, William Milman	4 00
Second, Warren Fenno	3 00
Third, Charles E. Swain	2 00
Fourth, F. W. Damon	1 00
Clairgeau:	
First, Warren Fenno	3 00
Second, A. K. Gould	2 00
Third, J. S. Chase	1 00
Comice:	
First, Warren Fenno	4 00
Second, J. L. Bird	3 00
Third, A. K. Gould	2 00

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Dana's Hovey:	
First, M. Sullivan	4 00
Second, E. W. Wood	3 00
Third, Warren Fenno	2 00
Fourth, Warren Heustis & Son	1 00
Diel:	
First, Charles E. Swain	3 00
Second, A. K. Gould	2 00
Third, Edwin A. Hall	1 00
Glout Morceau:	
First, Warren Fenno	3 00
Second, Edwin A. Hall	2 00
Josephine of Malines:	
First, Warren Fenno	3 00
Second, J. L. Bird	2 00
Langelier:	
First, William H. Spooner	3 00
Second, A. T. Brown	2 00
Third, Warren Fenno	1 00
Lawrence:	
First, Charles E. Swain	3 00
Second, Warren Fenno	2 00
Third, M. Sullivan	1 00
Vicar:	
First, Mary B. Mendum	3 00
Second, E. S. Converse	2 00
Winter Nelis:	
First, Warren Fenno	3 00
Second, A. A. Johnson	2 00
Third, E. S. Converse	1 00
Any other variety:	
First, William Milman, Mount Vernon	3 00
Second, Warren Fenno, Bosc	2 00
Third, Varnum Frost, Bartlett	1 00
QUINCES. — Any variety:	
First, Warren Fenno, Orange	3 00
Second, E. M. Bruce	2 00
Third, A. E. Hartshorn	1 00
FOREIGN GRAPES. — Two bunches of any variety:	
First, Mrs. John C. Whitin, Black Alicante	5 00
Second, Mrs. John C. Whitin, Lady Downes	4 00

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Gratuities: —

C. C. Shaw, Collection of Apples	5 00
C. H. Hovey, South Pasadena, Cal., Pomegranates and Persimmons	3 00

E. W. Wood,
Charles F. Curtis,
O. B. Hadwen,
Warren Fenno,
J. Willard Hill,
Sumner Coolidge,
George F. Pierce,
} *Committee on Fruits.*

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REPORT

OF THE

COMMITTEE ON VEGETABLES

FOR THE YEAR 1901.

By WARREN HOWARD HEUSTIS, CHAIRMAN.

The exhibitions held during the past year were very successful and in almost every case the prizes have been fully competed for. As a matter of fact, we have, of necessity, to repeat the exhibits from week to week, owing to the limited variety of vegetables during certain portions of the year. At the same time, we get very good specimens and the prizes are quite evenly distributed, no person succeeding in taking prizes on the same variety week after week. The interest displayed on other days than those scheduled for prizes is quite strong and we should be disappointed to see these shows given up. It was stated that we should not be able to get a full exhibit at the new hall, but we were very much gratified to find that we had every foot of space that was allotted us filled, and also had an overflow of vegetables in the basement which would have been a credit to any society, but we are sorry to say that very few people saw them.

There have been no vegetables shown that were superior or deserving of special mention over preceding years, but we would mention six lots of cauliflower grown by four different parties; we think we never saw a more uniform lot.

We are pleased to report that the Executive Committee has seen fit not to reduce the appropriation for the coming year, and we shall endeavor to keep up the usual high standard as in the past. The large exhibits from Worcester and Taunton are very gratifying and prove that where there are prizes to be awarded there will be no lack of competitors.

Five hundred and fifty-seven dollars have been awarded for prizes and gratuities during the past year, leaving a balance of six hundred and forty-three dollars, out of which a Silver Medal and a Bronze Medal are to be paid for.

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PRIZES AND GRATUITIES AWARDED FOR VEGETABLES.

1901.

JANUARY 5.

RADISHES.—Four bunches of any variety:	
First, A. E. Hartshorn	$3 00
SALSIFY.—Twelve specimens:	
First, W. Heustis & Son	3 00
Second, George D. Moore	2 00
Third, A. E. Hartshorn	1 00
CUCUMBERS.—Pair of any variety:	
First, Francis Blake, White Spine	3 00
Second, Mrs. John L. Gardner, Telegraph	2 00
CAULIFLOWERS.—Four specimens:	
First, DeSouza Brothers	3 00
Second, C. M. Handley	2 00
CELERY.—Four roots:	
First, H. R. Kinney, Pascal	3 00
Second, A. E. Hartshorn, Pascal	2 00
Third, W. Heustis & Son, Boston Market	1 00
LETTUCE.—Four heads of Tennisball:	
First, Wyman Brothers	3 00
Second, J. C. Stone	2 00
Third, A. E. Hartshorn	1 00
PARSLEY.—Two quarts:	
First, W. J. Clemson, Chappell's Matchless	2 00
Second, W. J. Clemson, Moss Curled	1 00
MUSHROOMS.—Twenty-four specimens:	
First, H. R. Kinney	3 00
Second, E. S. Converse	2 00
TOMATOES.—Twelve specimens:	
First, W. C. Winter, May's Favorite	3 00
Second, Francis Blake, Best of All	2 00
Third, W. C. Winter, Stone	1 00
Gratuities:—	
A. E. Hartshorn, Collection	3 00
W. Heustis & Son, "	2 00

FEBRUARY 2.

RADISHES.—Four bunches of any variety:	
First, Varnum Frost	3 00
Second, H. R. Kinney	2 00
Third, A. E. Hartshorn	1 00

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SALSIFY.—Twelve specimens:

First, George D. Moore	3 00
Second, W. Heustis & Son	2 00
Third, A. E. Hartshorn	1 00

CUCUMBERS.—Pair of any variety:

First, Francis Blake	3 00

CELERY.—Four roots:

First, George D. Moore, Pascal	3 00
Second, H. R. Kinney, "	2 00
Third, W. Heustis & Son, "	1 00

DANDELIONS.—Peck:

First, A. E. Hartshorn	3 00

LETTUCE.—Four heads of Tennisball:

First, Varnum Frost	3 00
Second, Wyman Brothers	2 00
Third, George D. Moore	1 00

MUSHROOMS.—Twenty-four specimens:

First, H. R. Kinney	3 00

TOMATOES.—Twelve specimens:

First, Francis Blake, Best of All	3 00
Second, W. C. Winter, May's Favorite	2 00
Third, W. C. Winter, Stone	1 00

Gratuities:—

A. E. Hartshorn, Collection	2 00
George D. Moore, "	2 00

FEBRUARY 9.

Gratuity:—

W. Heustis & Son, Celery	1 00

FEBRUARY 16.

Gratuities:—

A. Nixon, Celery	1 00
George D. Moore, Collection	1 00

FEBRUARY 23.

Gratuities:—

Wyman Brothers, Lettuce	1 00
W. W. Rawson, Collection	1 00

MARCH 2.

Gratuities:—

George D. Moore, Lettuce	1 00
A. Nixon, Radishes	1 00

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MARCH 9.

Gratuities:—

George D. Moore, Lettuce	1 00
W. W. Rawson, "	1 00

MARCH 16.

Gratuity:—

George D. Moore, Lettuce	1 00

SPRING EXHIBITION.

MARCH 19, 20, 21, AND 22.

RADISHES.—Four bunches of Turnip Rooted:	
First, H. R. Kinney	2 00
Second, Varnum Frost	1 00
CUCUMBERS.—Pair of White Spine:	
First, Francis Blake	3 00
Second, E. M. Bruce	2 00
SPINACH.—Half-peck:	
First, Hon. Aaron Low	3 00
DANDELIONS.—Peck:	
First, A. E. Hartshorn, French Thick-leaved	3 00
Second, A. E. Hartshorn, Improved American	2 00
LETTUCE.—Four heads of Tennisball:	
First, George D. Moore	3 00
Second, A. E. Hartshorn	2 00
Third, H. R. Kinney	1 00
WATER CRESS.—Two quarts:	
First, A. E. Hartshorn	2 00
PARSLEY.—Two quarts:	
First, S. J. Goddard, Chappell's Matchless	2 00
Second, A. E. Hartshorn, Moss Curled	1 00
MUSHROOMS.—Twenty-four specimens:	
First, H. R. Kinney	3 00
RHUBARB.—Twelve stalks:	
First, George D. Moore	3 00
TOMATOES.—Twelve specimens:	
First, W. J. Clemson, Frogmore	3 00
Second, W. J. Clemson, Best of All	2 00
Third, Miss M. S. Walker, Essex Hybrid	1 00

Gratuities:—

Hon. Aaron Low, Collection	5 00
W. Heustis & Son, "	5 00
A. E. Hartshorn, "	3 00
W. J. Clemson, "	1 00
George D. Moore, "	1 00

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MARCH 30.

Gratuity:—

Hon. Aaron Low, Spinach	1 00

APRIL 6.

BEETS.—Turnip Rooted, twelve specimens:	
First, George D. Moore	3 00
Second, A. Nixon	2 00
PARSNIPS.—Twelve specimens:	
First, George D. Moore	3 00
Second, A. E. Hartshorn	2 00
Third, W. Warburton	1 00
RADISHES.—Four bunches:	
First, A. E. Hartshorn	2 00
Second, W. W. Rawson	1 00
LETTUCE.—Four heads of Tennisball:	
First, George D. Moore	3 00
Second, W. W. Rawson	2 00
Third, Wyman Brothers	1 00
CUCUMBERS.—Pair of White Spine:	
First, Varnum Frost	3 00
Second, E. M. Bruce	2 00
Third, W. W. Rawson	1 00
Any other variety:	
First, Mrs. J. L. Gardner	3 00
Second, E. M. Bruce	2 00

Gratuities:—

Hon. Aaron Low, Spinach	1 00
Mrs. F. L. Ames, Tomatoes	1 00
A. E. Hartshorn, Collection	1 00
George D. Moore, "	1 00
W. Heustis & Son, "	1 00
Wyman Brothers, "	1 00

CHRYSANTHEMUM SHOW.

NOVEMBER 7, 8, 9, AND 10.

☞ This was the opening exhibition held by the Society in its new halls and includes the postponed **Annual Exhibition of Plants and Flowers** and **Annual Exhibition of Fruits and Vegetables,** which were scheduled for September.

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ANNUAL EXHIBITION.

SEPTEMBER 26 AND 27.

POTATOES.—Best collection new seedling varieties:

Hon. Aaron Low	The Society's Silver Medal.

For the second best:

Hon. Aaron Low	The Society's Bronze Medal.

BEETS.—Twelve Turnip Rooted:

First, E. L. Lewis, Edwards	3 00
Second, W. Heustis & Son, Egyptian	2 00
Third, A. E. Hartshorn, Edwards	1 00

CARROTS.—Twelve Long Orange:

First, A. E. Hartshorn	3 00
Second, W. Warburton	2 00
Third, W. J. Clemson	1 00

Twelve Intermediate:

First, A. E. Hartshorn	3 00
Second, W. Heustis & Son	2 00
Third, Joseph Thorpe	1 00

PARSNIPS.—Twelve Long:

First, A. E. Hartshorn	3 00
Second, W. J. Clemson	2 00
Third, George D. Moore	1 00

POTATOES.—Carmen No. 1:

First, H. E Rich	3 00
Second, H. W. Anderson	2 00
Third, Hon. Aaron Low	1 00

Clark:

First, H. R. Kinney	3 00
Second, H. W. Anderson	2 00
Third, Hon. Aaron Low	1 00

Early Fortune:

First, H. W. Anderson	3 00
Second, Hon. Aaron Low	2 00

Hebron:

First, F. J. Kinney	3 00
Second, H. E. Rich	2 00
Third, H. W. Anderson	1 00

Rose:

First, H. R. Kinney	3 00
Second, H. W. Anderson	2 00

Any other variety:

First, F. J. Kinney, Sir Walter Raleigh	3 00
Second, Hon. Aaron Low, "	2 00
Third, H. W. Anderson, Snowflake	1 00

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SALSIFY.—Twelve specimens:
- First, George D. Moore 3 00
- Second, W. J. Clemson 2 00
- Third, H. R. King 1 00

TURNIPS.—Twelve Flat:
- First, Hon. Aaron Low, White Milan 3 00
- Second, Hon. Aaron Low, Purple Milan 2 00
- Third, Hon. Aaron Low, Purple Strap Leaf 1 00

Swedish:
- First, Charles H. Brewster 3 00
- Second, H. R. King 2 00
- Third, H. R. King 1 00

ONIONS.—Twelve Danvers:
- First, E. M. Bruce 3 00
- Second, Charles Scully 2 00
- Third, W. Warburton 1 00

Red:
- First, E. M. Bruce 3 00
- Second, A. E. Hartshorn 2 00
- Third, H. E. Rich 1 00

White:
- First, H. E. Rich 2 00
- Second, A. E. Hartshorn 1 00

Any other variety:
- First, E. M. Bruce 3 00
- Second, E. L. Lewis 2 00

SQUASHES.—Three Bay State:
- First, E. L. Lewis 3 00

Hubbard:
- First, J. C. Stone 3 00
- Second, A. E. Hartshorn 2 00
- Third, A. F. Coolidge 1 00

Hybrid Turban:
- First, E. L. Lewis 3 00

Marblehead:
- First, E. L. Lewis 3 00

Marrow:
- First, Varnum Frost 3 00
- Second, E. L. Lewis 2 00

Any other variety:
- First, E. L. Lewis 3 00
- Second, A. E. Hartshorn 2 00
- Third, Hon. Aaron Low 1 00

CUCUMBERS.—Pair of White Spine:
- First, W. A. Bruce 3 00

Any other variety:
- First, W. A. Bruce, Hybrid 3 00
- Second, Mrs. J. L. Gardner, Telegraph 2 00

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WATERMELONS.—Two specimens:

First, E. L. Lewis	3 00
Second, J. F. Jones	2 00
Third, Joseph Thorpe	1 00

BRUSSELS SPROUTS.—Half-peck:

First, Mrs. J. L. Gardner	3 00
Second, A. E. Hartshorn	2 00

CABBAGES.—Three Drumhead, trimmed:

First, E. L. Lewis	3 00
Second, E. L. Lewis	2 00
Third, A. E. Hartshorn	1 00

Red:

First, H. E. Rich	3 00
Second, E. L. Lewis	2 00
Third, E. L. Lewis	1 00

Savoy:

First, J. C. Stone	3 00
Second, W. Warburton	2 00
Third, E. L. Lewis	1 00

CAULIFLOWERS.—Four specimens:

First, DeSouza Brothers	5 00
Second, C. M. Handley	4 00
Third, H. E. Rich	3 00

CELERY.—Four roots of Paris Golden, best kept during the exhibition:

First, J. C. Stone	5 00
Second, A. E. Hartshorn	4 00
Third, A. F. Coolidge	3 00

Any other variety:

First, W. Heustis & Son, Pascal	5 00
Second, A. E. Hartshorn, Boston Market	4 00
Third, W. Warburton, White Plume	3 00

ENDIVE.—Four specimens:

First, A. Nixon	3 00
Second, A. E. Hartshorn	2 00
Third, E. L. Lewis	1 00

LETTUCE.—Four heads:

First, Varnum Frost, Big Boston	3 00
Second, George D. Moore, Tennisball	2 00
Third, J. C. Stone, "	1 00

PARSLEY.—Two quarts:

First, W. J. Clemson, Matchless	2 00
Second, W. J. Clemson, Champion	1 00

HORSERADISH.—Six roots, present year's growth:

First, H. R. Kinney	2 00

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CORN.—Yellow or Field, twenty-five ears, traced:

First, B. P. Winch	3 00
Second, Elliott Moore	2 00
Third, L. C. Linscott	1 00
Sweet, twelve ears:	
First, H. R. King	3 00
Second, Charles Scully	2 00
Third, H. W. Anderson	1 00

TOMATOES.—Twelve Aristocrat:

First, W. Warburton	3 00
May's Favorite:	
First, Hon. Aaron Low	3 00
Second, W. Heustis & Son	2 00
Stone:	
First, Hon. Aaron Low	3 00
Second, Joseph Thorpe	2 00
Any other variety:	
First, Hon. Aaron Low, Enormous	3 00
Second, Hon. Aaron Low, Combination	2 00

PEPPERS.—Twelve specimens of Squash:

First, Hon. Aaron Low	3 00
Second, A. Nixon	2 00
Any other variety:	
First, Hon. Aaron Low, Bull Nose	3 00
Second, Hon. Aaron Low, Ruby King	2 00
Third, Joseph Thorpe, Giant	1 00

CULINARY HERBS, GREEN.—Collection, named:

First, W. J. Clemson	5 00
Second, W. Warburton	4 00

NOVEMBER 10.

PARSNIPS.—Twelve specimens:

First, Varnum Frost	3 00
Second, A. E. Hartshorn	2 00
Third, H. R. King	1 00

SALSIFY.—Twelve specimens:

First, Varnum Frost	3 00
Second, H. R. King	2 00

CUCUMBERS.—Pair:

First, E. L. Dorr	3 00
Second, E. L. Dorr	2 00
Third, Mrs. J. L. Gardner	1 00

CABBAGES.—Three Red, trimmed:

First, A. E. Hartshorn	3 00
Second, H. E. Rich	2 00

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Savoy:	
First, A. E. Hartshorn	3 00
BRUSSELS SPROUTS.—Half-peck:	
First, A. E. Hartshorn	3 00
Second, A. E. Hartshorn	2 00
Third, C. W. Parker	1 00
CAULIFLOWER.—Four specimens:	
First, C. M. Handley	3 00
Second, W. H. Teele	2 00
Third, DeSouza Brothers	1 00
CELERY.—Four roots:	
First, Joseph Thorpe	3 00
Second, W. Heustis & Son	2 00
Third, A. F. Coolidge	1 00
LETTUCE.—Four heads:	
First, Varnum Frost	3 00
Second, A. E. Hartshorn	2 00
TOMATOES.—Twelve specimens, grown under glass:	
First, W. C. Winter, Combination	3 00
Second, W. C. Winter, Stone	2 00
Third, E. L. Dorr, Essex	1 00
Gratuities:—	
N. W. T. Knott, Gourds	1 00
C. W. Parker, Display	2 00
E. L. Lewis, Collection	10 00
W. J. Clemson, "	5 00
A. F. Coolidge, "	5 00
W. Heustis & Son, "	5 00
Hon. Aaron Low, "	5 00
George D. Moore, "	3 00
A. Nixon, "	5 00
W. Warburton, "	5 00

WARREN HOWARD HEUSTIS,
CEPHAS H. BRACKETT,
VARNUM FROST,
WALTER RUSSELL,
AARON LOW,
GEORGE D. MOORE,
JOSHUA C. STONE,

Committee on Vegetables.

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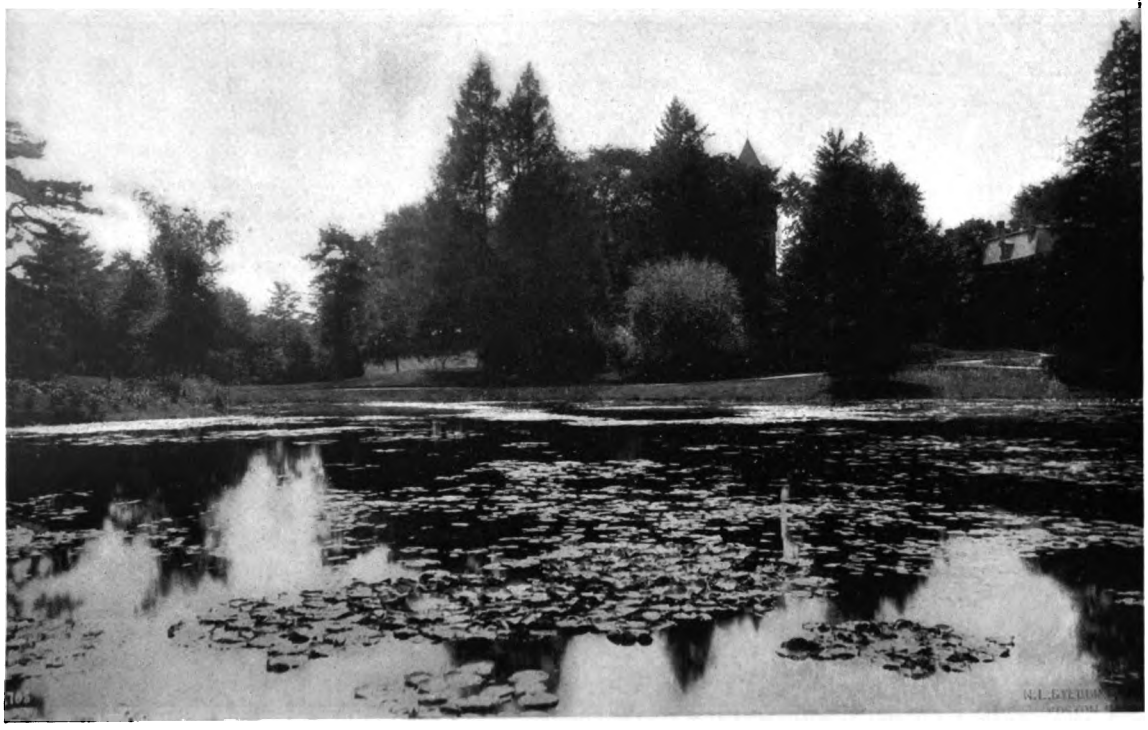

The Gov. Oliver. Ames Estate at North Easton.

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REPORT

OF THE

COMMITTEE ON GARDENS

FOR THE YEAR 1901.

By PATRICK NORTON, CHAIRMAN.

Your Committee has been very active during the year just closing, and has visited a large number of places, and the knowledge thus gained of the different methods employed in the cultivation of plants will be useful not only to the Committee, but to all who read this report. We will take the places visited in rotation, and describe in as brief a manner as possible the later or newer methods adopted to bring about the success each grower aims to accomplish.

W. W. RAWSON'S LETTUCE HOUSE, ARLINGTON.

The first place visited (February 21, 1901) was that of W. W. Rawson at Arlington, who has thirty-five large greenhouses and two thousand sashes of hotbeds, mostly devoted to the growing of lettuce, radishes and cucumbers for the market. Here we saw for the first time the process of sterilizing the soil in which the plants were grown. This process is no doubt a great benefit, as the immense steam heat which permeates every portion of the soil kills all germs of fungi deleterious to plants and all seeds of weeds as well, thus leaving the soil in splendid condition for a year's cultivation. This process is to be commended.

Lettuce plants were in all stages of development, from the planted seeds just appearing above ground to the large perfect heads ready for market. The house we were asked to scrutinize

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was four hundred feet long and fifty feet wide and contained thirty-seven thousand plants averaging over one foot in diameter, a remarkable showing of splendid plants. Another house containing cucumbers was very fine, and the plants very vigorous and heavily set with fruit.

Peter Fisher's Carnation House, Ellis.

The second place visited (March 14, 1901) was that of Peter Fisher, at Ellis. His specialty is the growing of carnations. He had several houses of these plants, and in some of them he was testing the qualities of the best plants sent out by different growers, and also, to a greater extent, testing numerous seedlings of his own production. He is a very enthusiastic cultivator of carnations and has put upon the market the best one yet produced in America; wherever it has been exhibited it has taken first prize over all others, and when we saw it growing on the benches we ceased to wonder at its success. The house entered was three hundred and two feet long by twenty-three feet wide and presented the finest appearance of any house of carnations your Committee ever saw. The flowers and buds were more numerous and the expanded flowers were larger and of more perfect shape and color than any we ever saw before. There were no expanded flowers in the house that would measure less than three inches in diameter, and from that up to four inches, with upright stems holding the flowers in a presentable condition.

Mr. Fisher submits a description of his principal house for growing carnations, as follows:

House of modern construction, three hundred and two feet long, twenty-three feet wide, and twelve feet high to ridge running north and south. Continuous ventilators each two feet wide, on both sides of ridge. Benches five feet wide, lengthwise of house, with a walk eighteen inches wide next to walls. Benches rest on three-quarter inch iron pipe. Woodwork, cypress. Glass, 16 x 24. Cement walls, in which are set one and one-half inch iron posts to sustain the structure.

Compost consists of sods from old pasture, well rotted, with a liberal addition of ground bone, lime and stable manure in about equal quantities. The plants were transferred from the open

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Peter Fisher's Carnation House at Ellis. The Mrs. Thomas W. Lawson Carnation.

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ground to the benches about the middle of August, and the first stimulant was given late in November, in the form of a light top dressing composed of half soil, and half pulverized sheep manure and bone meal. Air-slaked lime was freely applied when the soil showed signs of becoming sour.

The temperature was 52° to 55° during the night, with a rise of 15° to 20° during the day.

The principal crop consisted of:

3,000	plants	Mrs. Thomas W. Lawson,
1,000	"	Maine,
1,000	"	Eastern Star,
500	"	The Marquis,
500	"	Mrs. George M. Bradt.

Steam was used for heating the house with four one and one-quarter inch pipes on each side and one one and one-quarter inch pipe under each bench.

Mr. Fisher entered for the best House of Carnations.

Mrs. David Nevins's Estate, Methuen.

The next visit which occurred on June 20th, was to the beautiful old estate of Mrs. David Nevins, at Methuen. This estate, occupied by the ancestors of Mrs. Nevins in the eighteenth century, was now undergoing extensive repairs and improvements, but the admirable features of the old mansion were being preserved. The shrubbery, which forms one of the great charms of the place, was in splendid condition, owing principally to the unremitting vigilance of the owner. The place is surrounded by noble elms interspersed with clumps of fine shrubbery, and the Spicket River, flowing through velvety green banks on one side of this estate, makes it a very attractive homestead, while the view from the summerhouse over an expanse of meadow and far away, gives a charm of restful pleasure to the place not exceeded anywhere.

Warren H. Heustis's Strawberry Garden, Belmont.

On June 26th the Garden Committee visited the fruit and vegetable farm of Warren H. Heustis, at Belmont, to inspect his strawberry garden and to pass upon the quality of the fruit. It

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would appear that Mr. Heustis cannot any further improve upon the size or quality of strawberries, for those we saw and tested were as near perfection as they can be grown in this part of the country; expert growers from other towns were of the same opinion as your Committee. The kinds mostly cultivated were the Marshall and Belmont. The latter originated on this farm, and still retains the good keeping qualities, large size and fine flavor it had when first shown. We congratulate Mr. Heustis on knowing how to grow good strawberries.

GEORGE D. MOORE'S CUCUMBER HOUSE, ARLINGTON.

On June 27th we visited Arlington to inspect a house of cucumbers as grown by George D. Moore & Son. The house was two hundred and forty feet long by thirty-five feet wide, and contained about six hundred plants well set with fruit and in vigorous health. From the good condition of this house we infer that these people have not forgotten how well their house looked two years ago, and, taking that as their standard of excellence, have this year fully equaled their pattern. The vegetable garden was of the usual type of the market gardener, and showed good cultivation and a very thrifty appearance. We append Mr. Moore's letter giving his method of growing crops.

PATRICK NORTON, *Chairman Committee on Gardens*;

DEAR SIR: — Complying with your request to make a statement concerning methods pursued in reaching the high state of cultivation in which you found my farm or market garden when visiting me last summer, let me say to start with that this subject has been so frequently and ably treated by those better qualified than myself to write upon it, that I hesitate to attempt to make you a statement fearing that I shall fail to do either myself or the subject justice. But as you have awarded me the first premium it is but just that you should demand of me some explanation of the methods pursued. So I will briefly tell my story.

To begin with I am largely indebted to a generous water supply. In the fall of 1900 I secured the services of Morton & Waugh of Boston to provide me a water supply that would furnish enough, not only for my four large greenhouses and one thousand hotbed sashes, but for ample outside irrigation in my seventeen acre garden; to say they fully succeeded hardly does them justice for of the four two and one-half inch wells put down

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The Gov. Oliver Ames Estate at North Easton.

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(one struck a rock and was abandoned), three at the depth of fifty to sixty feet furnished a bounteous supply of the purest and best of water. A Dean steam pump of four inch suction, throwing nearly two hundred gallons per minute night and day enabled us to water thoroughly both the crops and the land before planting; also to wet down the fresh strawy horse manure as brought from city stables forcing the rotting, and aiding its preparation for the soil.

On much of my land I raise two or three crops, sowing early spinach and as soon as the ground is in condition to cultivate there follows a crop of beets with every fifth row left for celery; or, I plant the early beets for a first crop, carefully preparing the soil by plowing and harrowing, then a fair dressing of stable manure is lightly plowed in and well rotted if possible, supplementing the manure by one-half a ton to the acre of some reliable phosphate (we have found nothing better than Bowker's or Stockbridge Specials). I rake this in thoroughly after the last plowing. This is practically my method with all crops except tomatoes, parsnips, carrots etc.; these crops do not need fertilizing so liberally. If at any time you wish me to give you a statement of my management of hotbeds, or a more minute explanation of my treatment of any special outside crop, please command me.

GEORGE D. MOORE,
M. ERNEST MOORE, *Proprietor and Manager.*

ESTATE OF H. H. ROGERS, FAIRHAVEN.

The sixth place visited was that of H. H. Rogers, at Fairhaven. This estate is entered in competition for the H. H. Hunnewell Triennial Premium, and this was the Committee's first visit. It consists of eight acres of reclaimed land on the borders of the sea which separates Fairhaven and New Bedford. The situation is very much exposed to the winds from the ocean, but the caretaker, Mr. James Garthley, has so judiciously laid out the grounds and carefully planted the trees, shrubs and flowers as to make it a beautiful home for the owner.

THE OLIVER AMES ESTATE.

On August 13th the Committee was called to view the Oliver Ames estate, at North Easton. This estate is entered for the H. H. Hunnewell Triennial Premium, by Mr. Oakes Ames, son of the late Governor, and this is the third year of inspection. The

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whole estate was in very fine condition. The grand old trees, which were planted by the late Governor of this Commonwealth, were in better condition than ever before, and their appearance indicated that they were receiving the kind care essential to good healthy growth. The lily ponds were resplendent with blooms of all sorts of aquatics from the four quarters of the globe, and presented a grand appearance. This estate shows not only the constant change going on in the vegetable products that are being gathered from all parts of the world for scientific and ornamental purposes but accessions are continually being made by importations and Mr. Ames's own hybridizations, thus making the place actually a botanic museum of living plants.

Estate of C. H. Tenney, Methuen.

On September 27th we visited "Greycourt," the regal estate of C. H. Tenney, at Methuen. This estate was entered for the H. H. Hunnewell Triennial Premium, and this is the second year of entry. The last year's Transactions, Part II, contains a photograph of this estate which appeals to the eye better than any language can portray its beauties. Mr. Tenney is constantly improving his ground by judiciously cutting out trees and shrubs where they have grown so large as to interfere with each other, thus giving the more valulable one room to expand and also a longer lease of life. He is also constructing on the north side of the hill on which the house stands a splendid bowling green, the first in New England, with all the accessories to make the sport of bowling on the turf a pleasant and agreeable exercise and a joy forever to those who believe in athletic sports.

W. P. Lothrop's Dahlia Garden, East Bridgewater.

The next visit, which occurred on September 30th, was to the dahlia farm of W. P. Lothrop, East Bridgewater. This farm consists of four acres and was planted with about four hundred varieties of dahlias — growing from twenty thousand hills. New varieties of special merit are constantly being added and sixty new kinds were acquired this year. They are of every conceivable description, but it seems that the variety described as the

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The Chrysanthemum House of Hon. E. S. Converse, Malden.

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Cactus dahlia is the most sought for. Mr. Lothrop planted a bed of four hundred plants at the Paris Exposition last year and received for the display a medal. The roots will be stored during the winter, packed in dry sand.

Waban Rose Conservatories, Natick.

On Monday, November 4th, the Committee visited the extensive Waban Rose Conservatories at Natick. The whole plant is under the care of Alexander Montgomery, and when we say this and have seen the contents of the houses, we know that Mr. Montgomery understands how to grow roses. The rose bushes were perfectly free from insects and mildew and presented the finest show of buds and flowers conceivable. Only a few kinds were grown, and those were the ones most sought for by dealers; they consisted of The Bride, Bridesmaid, American Beauty, Morgan, Liberty, Madame de Watteville and Helen Gould. Some of the houses contained sixty-five hundred plants, and when we looked over the beds of luxurious bloom seven hundred feet in length we began to wonder where all the roses go to, but these were so well grown and splendidly finished that there was no difficulty in disposing of all at remunerative prices. The Proprietors contemplate building another house seven hundred and fifty-two feet long by fifty-two feet wide, in the near future, so as to enable them to grow a few more roses.

Estate of Colonel Charles Pfaff, South Framingham.

The next visit was to the elegant estate of Colonel Charles Pfaff, South Framingham, on November 4th, to inspect a house of chrysanthemums grown on benches. Six hundred and fifty plants comprising seventy varieties, with one flower on each plant were a beautiful sight, and the gardener, Mr. George Melvin, was complimented by the Committee for his efficiency in producing such fine blooms.

Estate of E. S. Converse, Malden.

On November 5th the Committee visited the estate of The Hon. E. S. Converse, at Malden, to inspect his two chrysanthemum

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houses in which the plants are grown in pots and arranged with other plants for effect. This plan makes the houses look beautiful, and the gardener, Mr. D. F. Roy, has certainly accomplished the object striven for. The chrysanthemums were arranged on each side of the path lengthwise of the houses, with handsome foliage plants intermixed. The standard chrysanthemum plants were placed at stated intervals, which added very materially to the beauty of the houses.

Mrs. A. W. Spencer's Chrysanthemum House, South Framingham.

On November 6th the Committee was called to inspect a house of chrysanthemums grown on benches by Alexander McKay, gardener to Mrs. A. W. Spencer, of South Framingham. There were in this house four hundred plants in sixty-two varieties, grown to one flower each. The flowers were splendidly grown, of very large size and well finished.

Estate of Frederick Parker, Bedford.

On the 13th of November the Committee visited the Shawsheen River Farm of Frederick Parker, at Bedford, to inspect crops of cucumbers, tomatoes and lettuce. There were three houses, three hundred feet long by thirty-six feet wide, each of which would contain nineteen thousand four hundred and forty-eight plants of lettuce. One of these houses was used for propagating seeds of all kinds till late in the spring, when it was planted to cucumbers. Two other houses, three hundred and fifty feet long by thirty-six feet wide, each contained twenty-two thousand four hundred and forty lettuce plants nearly ready for the market. Another house of lettuce was three hundred and thirty feet long and thirty-six feet wide and contained twenty-one thousand, seven hundred and thirty-six lettuce plants. In another house were growing three hundred and eighty hills of cucumbers, set two and one-half feet apart; these were not a great success, although a fair crop had matured and was being harvested.

The tomato house was one hundred and forty-six feet long by thirty-six feet wide, and contained five hundred and sixty-eight

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plants in the most flourishing state of any tomato house we ever saw. The seed was sown on the 8th of July, and when the plants were large enough to handle they were potted into small pots; as the plants grew and filled the pots with roots, they were "potted on" till the first fruit was set, then transferred to the fruiting beds in the house, which were sixteen inches deep and very rich. Here they were trained to one stem and showed more fruit than any house we ever saw. The first picking began in early November. The variety was Henderson's Freedom. Our attention was called to a small house twenty-five feet long by twenty feet wide, which was full of tomato vines and had been planted nearly one year and was now showing a fair crop of fruit. The soil used in these houses was thoroughly sterilized and the rotation generally followed was three crops of lettuce and a crop of cucumbers. The whole plant was in fine condition and reflected very much credit on Mr. C. A. Learned, the manager.

R. & J. Farquhar's House of Begonia Gloire de Lorraine, Mount Hope.

The last place visited was at Mount Hope. The greenhouses belong to R. & J. Farquhar & Co. and William Donald is manager. The object of our visit was to inspect a house of begonias of the Gloire de Lorraine type. This house contained more than ten thousand plants of all sizes, and presented a grand appearance. There were the original pink, the newer white Caledonia, and the Compacta, a new variety originated here. These plants were grown at as cool a temperature as possible, so that they would withstand being transferred to dwelling houses. They make very handsome house plants for they are always in bloom. The Committee did not confine themselves to admiring the begonias, but strolled over the different houses and got some ideas of what Mr. Donald was trying to accomplish. His palm house was very fine and contained palms of all ages and sizes. Probably the most useful work Mr. Donald is doing is the propagating of a new rose originated by Jackson T. Dawson. This rose is a cross between the Wichuraiana and the Crimson Rambler, both of which are runners, but this new Farquhar rose will excel them

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both in this respect. During the past four months over a thousand plants have been propagated, but they will not be put on the market till a large stock is accumulated. This rose is getting a splendid reputation from eminent gardeners who have seen it in bloom.

The Farquhars are preparing to erect more glass houses early in the spring, to accommodate their ever increasing business.

The Prizes and Gratuities awarded this year, are as follows:

H. H. Hunnewell Triennial Premium.

For an estate of not less than three acres, which shall be laid out with the most taste, planted most judiciously, and kept in the best order for three consecutive years,

First, The Oliver Ames Estate	$160 00

Special Prizes from the John A. Lowell Fund.

For the best house of Chrysanthemums grown on benches:	
First, Mrs. A. W. Spencer	30 00
Second, Col. Charles Pfaff	20 00
For the best House of Chrysanthemums with other plants arranged for effect, in pots:	
First, E. S. Converse	30 00
Second, E. S. Converse	20 00

Society's Prizes.

For the best House of Carnations:	
First, Peter Fisher	30 00
For the best House of Roses:	
First, Waban Rose Conservatories, American Beauties	30 00
Second, Waban Rose Conservatories, Assorted Teas	20 00
For the best Vegetable Garden:	
First, George D. Moore & Son	30 00
For the best House of Lettuce:	
First, W. W. Rawson	30 00
Second, Frederick Parker	20 00
For the best House of Cucumbers:	
First, George D. Moore & Son	30 00
For the best Strawberry Garden:	
First, Warren H. Heustis	30 00

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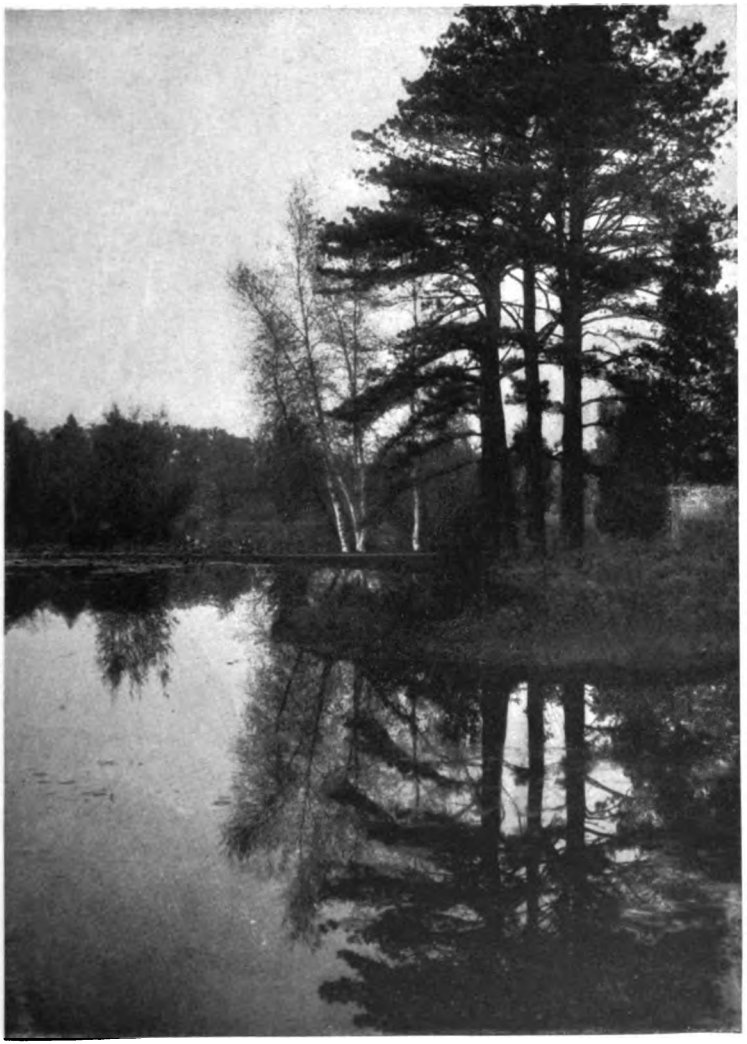

The Gov. Oliver Ames Estate at North Easton.

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Gratuities.

Mrs. David Nevins, Estate	25 00
W. P. Lothrop, Dahlia Garden	20 00
R. & J. Farquhar & Co., House of Begonia Gloire de Lorraine	25 00
Frederick Parker, House of Tomatoes	25 00
C. A. Learned, Superior Cultivation of Tomatoes under glass	Silver Medal

Respectfully submitted,

PATRICK NORTON,
ARTHUR H. FEWKES,
J. WOODWARD MANNING,
E. W. WOOD,
WARREN H. HEUSTIS,
J. H. WOODFORD,
JACKSON T. DAWSON,
HENRY W. WILSON,

Committee on Gardens.

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REPORT

OF THE

Committee on School Gardens and Children's Herbariums

FOR THE YEAR 1901.

By HENRY LINCOLN CLAPP, CHAIRMAN.

Even a brief consideration of the work for which this Committee stands will take us not only out of Massachusetts but out of New England as far as the Central States where we may find an extraordinary example of what may be done in training boys to habits of industry, teaching them to respect the rights of others, and making them instrumental in improving their neighborhood on a vast scale.

BOYS' GARDENS IN DAYTON, OHIO.

The boys' gardens established by the National Cash Register Company deserve a more extended notice than can be given in this report. There were forty gardens last year, but the increased demand necessitated seventy-four plots this year, each ten by one hundred and thirty feet in size, two and one-fifth acres in all. The cost of the land and the cultivation of it one year was $3500. The boys average about twelve years of age, and complete the course in gardening in two years, when each receives a certificate to the effect "that ——— has been instructed in the National Cash Register Company's Garden Work, and has been faithful and proficient in the same."

The certificates are signed by Mr. J. W. Patterson, the president of the Company. His own two children, Frederick and

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Dorothy, as well as his nephew and niece, are also proficient in gardening, showing that what he believes to be good for other children he thinks is just as good for his own. He thinks it is possible for boys to go to school too long and so become bookish and out of touch with the active business world; and he rates his experience on the farm more valuable than anything he ever learned at school, valuable as the latter undoubtedly was.

The result of this garden work has been most extraordinary. Slidertown was one of the worst parts of the city; now it is one of the very best, and its change of name to South Park is indicative of the change wrought in every condition. Three of the worst boys were gotten rid of, and "the rest were formed into clubs and brigades, and were given gardens and taught to respect themselves and the rights of others." Then land rose from $300 a lot to three times that amount; and the $3500 put into the garden work carried on by the boys is said to be the best investment for the money that the Company ever made.

In spite of the strike among the ungrateful employees of the Company and the long droughts a great amount of garden stuff was raised; namely, 814 dozen onions, 1332 dozen radishes, 962 dozen beets, 1258 dozen carrots, 481 dozen ears of sweet corn, 9 bushels of seed onions, 56 bushels of peas, 74 bushels of wax beans, 62 bushels of butter beans, 79 bushels of potatoes, 111 bushels of tomatoes, 9 bushels of sweet potatoes and 2590 heads of cabbage.

The land, tools, seeds and instructor were furnished by the Company. Most of the boys supplied their families with vegetables during the summer, and many earned enough money by the sale of vegetables not needed at home to pay for their school books.

The boys were given a supper, ten money prizes amounting to $35, five prizes each in the form of the Youth's Companion for a year, bronze medals and a stereopticon lecture by the president, Mr. Patterson.

Such an example is most worthy of imitation by other companies and associations having in view the uplifting and proper training of boys.

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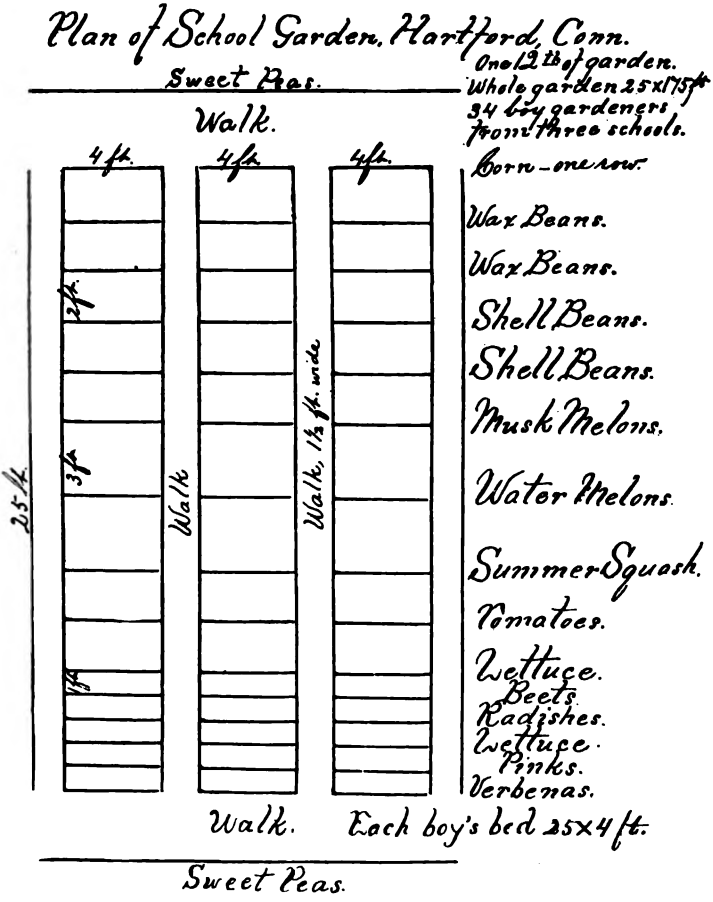
SCHOOL GARDENS, SCHOOL OF HORTICULTURE, HARTFORD, CONN.

The principals of three public schools selected ten boys apiece to work the beds prepared for them. The boys were furnished with tools, seeds, plants to set out, four-foot measuring sticks, twelve inch labels for the beds, note-books, pencils, etc. The number on the bed label corresponded with that on the note-book. In the note-book each boy drew a plan of his plot, wrote out the



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directions he received as to how his seeds should be planted and his plants cared for, and kept his attendance.

If a boy was absent twice in succession without excuse he ran the risk of losing his garden, as there were always plenty of boys on the waiting list ready to take forfeited gardens. Sixty-five per cent of the gardens did not change hands. Three of the beds changed three times apiece. Six of the delinquents said it was too far; two got tired; and two were delinquent even on excuses. Several boys had to come two or three miles, and a few of these never missed a lesson. Some of them stuck to their work although on three occasions it rained at intervals of a few minutes — and besides it was on Saturday when they worked. That showed commendable zeal.

The whole cost of the garden work (not including instruction and rent of land) was $47.33. The Civic Club voted to appropriate $25 in prizes for the following products: $1.00 each for the three best gardens, three best books, best ear of corn, vine of shell beans, vine of wax beans, beets, tomatoes, summer squash, watermelons and musk melons, bunch of verbenas, bunch of radishes and best essay of one hundred words on garden work, with second prizes for some of the things.

The judging was done by two prominent and competent men, Mr. George A. Parker, Superintendent of Keney Park, and Mr. Theodore Wirth, Superintendent of City Parks.

The nineteen boys who won prizes made an exhibit of the vegetables they had raised; and with the eatables to look at, the speeches to listen to, and the prizes to carry off, the occasion was an enjoyable one for the boys.

As a result of the summer's work the Committee says: "One of the churches here in the city has already cleared up an unsightly back yard, put up a new fence, plowed the ground, and proposes to have a class of the older Sunday School boys work in the garden thus formed and grow flowers for the use of the church and the sick.

"If the boy's time thus taken kept him usefully employed when he might otherwise have been running the streets or sowing the seeds of future crime, if he received lessons in industry, if he has

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learned things that will be of use to him later in life, if his health has been improved by being in the open air, if a love of things beautiful and a desire to search the mysteries of nature have been awakened within him; if he is better able to see what he looks at and understand what he sees, he will be broader in view and a better citizen, and his work in the allotment garden will not have been in vain."

SCHOOL GARDEN, BATH, MAINE.

MR. HENRY L. CLAPP,

DEAR SIR: The generosity of your Committee enabled me to add to our school garden the following plants:

Adiantum pedatum,
Aspidium Filix-mas,
Asplenium platyneuron,
Aquilegia oxysepala,
Aster alpinus,
" *Chapmani*,
" *lævis*,
" *Sibiricus*,
Cypripedium pubescens,
" *spectabile*,
Onoclea Struthiopteris,
Sanguinaria Canadensis,
Spiræa lobata,
Viola Alpestris,
" *pubescens*,
" *rostrata*.

The garden has been used by the botany class more this year than in any previous years. The pupils made a careful study of the plants as they appeared. They recorded the growth from day to day and made many good drawings of the plants in their various stages. Much interest was shown in the ferns, of which there are at present twenty species.

Very truly yours,

VIOLA G. HOGAN.

SCHOOL GARDEN OF THE TWENTIETH CENTURY CLUB, BOSTON.

Last spring (1901) a school garden containing eighty-two beds was established in the yard of the English High School on Dartmouth Street, Boston. It has been given the above title because two lady members of the Club were foremost in establishing it and

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the Club paid the expenses of it,—$50 to the gardener, $25 to the young lady who instructed the pupils during the summer vacation, and $17 for preparing the ground, laying out the beds for planting and miscellaneous expenses—$92 in all. Some tools and seeds were given by Joseph Breck & Sons.

Boys from the Rice School and girls from the Franklin School in about equal numbers, enjoyed the privilege of raising vegetables and flowers in this garden. The girls of the Normal School received instruction in garden work last summer in this garden instead of instruction in geology which they have had in previous years. So those who are preparing to teach will be equipped with the theory and practice of raising vegetables and flowers. That is an excellent beginning in the right place and in the right way. It must be borne in mind that there is behind this enterprise a club with money and meaning business. Thirteen dollars' worth of photographs of the garden is one indication of an intention to do a good thing even if it does cost a little money. The Club will bear the expenses of the garden another year, at least.

THE GEORGE PUTNAM SCHOOL GARDEN, BOSTON.

The second season of the kitchen garden on the grounds of the George Putnam School closed about November 1, 1901, when the pupils finished planting their bulbs for spring blooming. Here is a garden with more beds (eighty-four) than any other garden yet mentioned, which was laid out without expense to any one outside of the school, as a friend ploughed it free of charge and the children made all the beds out of the rough field of sods. They bore the expense of tools and seeds and did all the work. There were no special inducements to ensure faithful work—I wish there might have been—nevertheless, some of the pupils came regularly every week on Monday afternoon without any adult to meet and instruct them, and did not allow a single weed to be seen in their beds. They watered their plants when necessary, carried home lettuce, radishes, corn, kohl-rabi, beets, and other vegetable roots and flowers, and had their beds looking "spick and span" when the school opened in September. They just loved to do it. One

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girl wrote in her composition that she preferred gardening to anything she studied in school; and yet she was a good scholar.

There were many delinquents. No doubt some were constitutionally weary; some decided that a vacation was a very improper time to double up one's back like an inch-worm in order to pull weeds; some of them could run like hares on the "gridiron" and drip with sweat without thinking of it. But when school opened, delinquents and all took hold and eradicated all the weeds, perambulated with the water pots, straightened the beds and paths,

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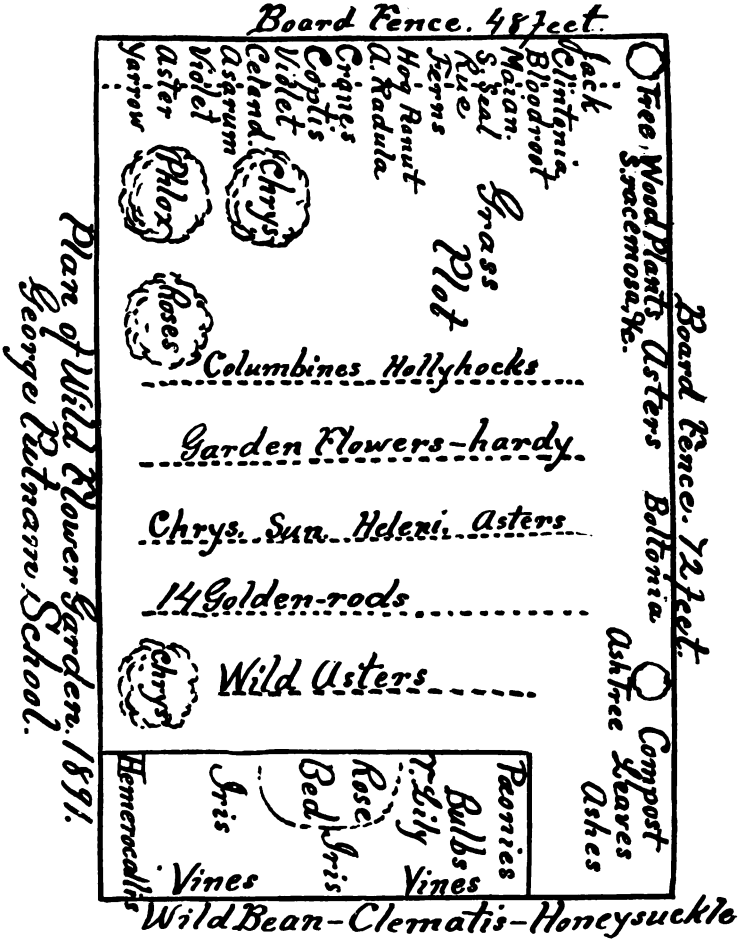
squinted with one eye half open, and put their wits to work generally. In a short time the existence of weeds during the summer would never have been suspected by the casual observer.



During October there was a fine display of hardy chrysanthemums, some red and some yellow, and sneezeweeds (*Helenium autumnale*) which had been planted by the hundreds in the pre-

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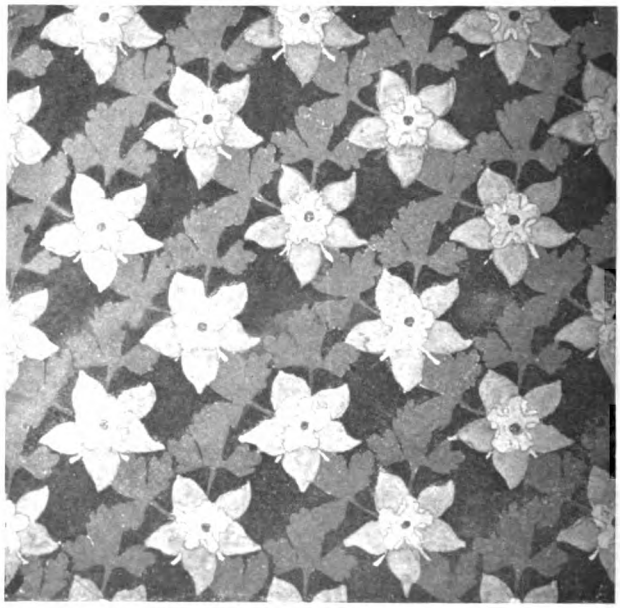
ceding spring. Generally each pupil had a red chrysanthemum in one end of his bed, and a yellow one in the other, and a sneezeweed in the middle. Since all blossomed profusely the garden was glorious with color.

As usual the material in the wild flower garden, which was begun in 1890, (see plan on opposite page), has been used in school in nature study and designing. A number of lantern



Pupil's Surface Design from Columbine, George Putnam School.

slides of designs based on the sneezeweed have been made. Many photographs of the pupils engaged in garden work have been taken, and half-tone prints from them are expected to appear as illustrations of an article on "A Boston School's Kitchen Garden" in the June number of the New England Magazine.

It may be mentioned in this connection that one hundred reprints of the article will be sent and given to persons interested in following out the work of this Society. Just a year prior to

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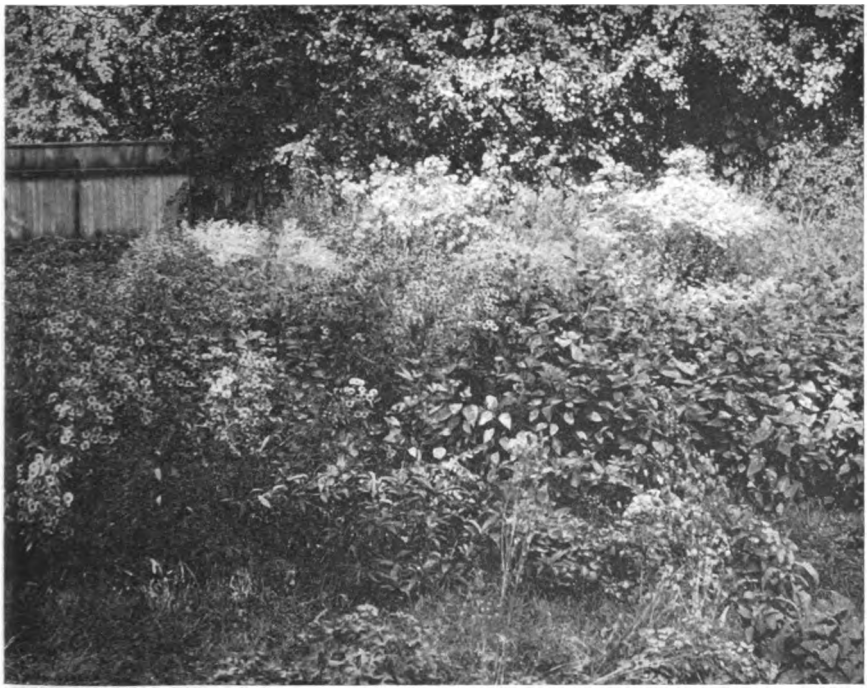
the appearance of the article just mentioned, or in May, 1901, the Chairman of the School Garden Committee wrote a sixteen page article on school gardens for the monthly magazine "Education" and had two hundred reprints struck off for distribution in preference to receiving cash for remuneration. The work is meritori-



Composite Flowers in Wild Flower Garden, George Putnam School.

ous enough to warrant the expenditure of time and skill in writing, photographing, lantern-slide making and actual currency of the nation.

INTEREST IN SCHOOL GARDENS INCREASING.

Immediately following the last Herbarium Exhibition this appeared in the editorial columns of the Transcript: "It does not seem that any statement should be necessary to show the ad-

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vantages of school gardens. Besides training habits of observation, garden work keeps children off the streets, cultivates habits of industry and respect for other people's gardens, gives the children a love of nature and turns their attention toward the blessings of out-door life as an offset to the strong current toward the life of the shops and the tenements. Window gardens in the home follow school gardens, and bring added sweetness to life. If the masters of the Boston schools would make more effort in this direction and were better supported by a Board of Education working in sympathy with the Massachusetts Horticultural Society, the children of the public schools would learn something that would be of quite as much value as much that they learn from books, and the city and the Commonwealth would be the gainers."

Interest in school gardens is increasing. Educators are beginning to appreciate the educational value of raising plants. The Educational League has published a leaflet on a German school garden. George Henry Knight of New York, wrote an article on the subject which came out in Pearson's Magazine last year; and he wrote me that he is going to publish another, and I have sent him some photographs to illustrate it. Dr. F. M. Powell, Superintendent of the Institution for Feeble-Minded Children in Glenwood, Iowa, is also writing a monograph on the subject, and I sent him four of the half-tone cuts that illustrated the report of our Committee last year. A number of women teachers, to my knowledge, are going to talk on the subject before clubs in Boston and vicinity. I had the pleasure of showing about sixty lantern slides of children at work in the school garden before the Boston Society of Natural History, December 18, 1901. In view of such indications as these there is no doubt that the subject is increasing in popular estimation.

CHILDREN'S HERBARIUMS.

Since there was considerable uncertainty as to whether the hall in this building would be ready for exhibition the Committee made less effort than usual to secure a large exhibit of herbariums; but they came just the same in unexpected numbers. Additional sat-

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isfaction was found in the attendance of an unusual number of children, a fact that could not be accounted for at first thought. Then came the idea that the hall was situated in a residential district, and all was plain. This promises well, not only for herbarium exhibitions but for all other kinds of exhibitions.

The exhibitors came in families, so to speak, more than in any previous year. There were three Murdoch boys, three Morss boys, two Swain boys, two French girls and two Clapp girls. For years past it has been noticed that the family interest in herbarium work has been much greater than any school interest; and so slight has the latter been that the Committee have decided to give up that part of their work and turn their attention to the encouragement of family interests. There seem to be dead weights on the schools so far as anything besides books is concerned. There are two probable reasons for this condition. Teachers generally are not yet sufficiently acquainted with wild flowers to have enough interest in herbarium work to induce their pupils to make herbariums. The past ten years' experience shows that individual parents have much more interest and efficiency in bringing about results in herbarium work than teachers. Secondly, the requirements of the course of study, are so exacting as to leave neither place nor time for collecting, pressing and mounting plants. So the case seems to be a hopeless one for public school children.

The most notable collection was that sent in by Dorothea Metcalf. The beauty of the arrangement of the plants and the preservation of their colors were far beyond anything else in the hall. Her parents were found to be enthusiastic in the work. And this attitude of the parents has been found to be so uniform through years that the Committee have come to rely upon it as a permanent thing, and to base all their hopes upon it.

Olive French's collection of fifty grasses and Christine Dudley Clapp's collection of leaf sprays were easily the best of their kind on exhibition. The mothers of these girls are deeply interested in their work. Olive's brother, Arthur, who exhibited so many years, is a skillful botanist, although still in his teens. And the little Marion French is coming along the same line.

The opportunity thus presented to children by the Massachusetts

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Horticultural Society is certainly a great one. The Committee hold it in higher and higher esteem as the years go on; and the children and their parents seem to be of the same mind.

The Committee have decided to make one radical change in their awards for herbariums; that is, to pay a definite sum for every specimen that comes up to the standard. This simplifies the work very much, and allows exhibitors to make additions many years without requiring the Committee to attempt the difficult task of determining a just award in view of all the plants that the exhibitor may have entered in previous years. Inducements for entering lichens and mosses have been made by offering a definite sum as indicated in the circular.

PRIZES AND GRATUITIES AWARDED FOR SCHOOL GARDENS AND CHILDREN'S HERBARIUMS.

SCHOOL GARDENS.

George Putnam School, Roxbury, first prize	$15 00
Gratuity:—	
High School, Bath, Me.	5 00

CHILDREN'S HERBARIUMS, NOVEMBER 30, 1901.

FLOWERING PLANTS.—For one hundred specimens:	
First prize, Dorothea Metcalf	$4 00
For twenty-five specimens:	
First prize, Donald N. Swain	1 50
Gratuities:—	
John Murdoch, Jr., eighty additions to four hundred and fifty	4 00
Joseph Murdoch, ninety-one additions to one hundred and sixty-seven	3 50
Richard Murdoch, ninety-four additions to one hundred and ten	3 00
Olive L. French, thirty-seven additions to two hundred and ninety-six	2 50
Marion L. French, seventy-six additions to sixty-six	2 00
Roscoe G. Knight, one hundred and three additions to one hundred and twenty	2 00
Edward L. Morss, seventy-five additions to fifty	2 00
Robert D. Morss, twenty-five additions to one hundred and fifty	1 25

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Philip B. Morss, twenty-five additions to one hundred and twenty-five	1 00
Winthrop C. Swain, twenty-five additions to sixty	75
GRASSES.—For fifty specimens:	
First prize, Olive L. French	5 00
For ten specimens:	
First prize, Joseph Murdoch	1 00
Second, Richard Murdoch	75
Gratuity:—	
John Murdoch, Jr., eighteen additions to thirty	2 00
SEDGES.—For thirty specimens:	
First prize, Joseph Murdoch	3 00
For twenty specimens:	
First prize, Richard Murdoch	2 00
Gratuities:—	
John Murdoch, Jr., twenty-three additions to forty-five	3 00
Olive L. French, seven additions to forty	1 00
FERNS.—For thirty specimens:	
First prize, Dorothea Clapp	5 00
For fifteen specimens:	
Second prize, Robert D. Morss	2 50
For ten specimens:	
Second prize, Philip B. Morss	1 50
Gratuities:—	
Roscoe G. Knight, seven additions to fifteen	1 25
John Murdoch, Jr., five additions to fifteen	1 00
SPRAYS OF LEAVES OF NATIVE TREES AND SHRUBS.—Collection, not less than thirty sheets, so arranged as to show both surfaces:	
First prize, Christine Dudley Clapp	3 00
Second, Roscoe G. Knight	2 00
Third, John Murdoch, Jr.	1 00
Gratuity:—	
Winthrop C. Swain, twenty sheets	75
Total for Gardens and Herbariums	$83 25

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The amount of money appropriated by the Society for the use of the Committee was:

For Prizes and Gratuities	$125 00		
For Current Expenses	75 00		
		$200 00	
Received from sales of paper		4 25	
			$204 25
Awarded for School Gardens		$20 00	
Awarded for Herbariums		63 25	
Paper		18 04	
Advertising		19 60	
Expressage, posters, stamping, etc.		13 00	
Postage, wrappers, etc.		1 50	
Total Expense			135 39
Balance unexpended			$68 86

HENRY L. CLAPP, *Chairman*, Roxbury,
MISS KATHARINE W. HUSTON, Roxbury,
WILLIAM P. RICH, Chelsea,
CHARLES W. JENKS, Bedford,
MRS. H. L. T. WOLCOTT, Dedham,
HENRY S. ADAMS, Boston,
W. E. C. RICH, *Secretary*,
99 Moreland Street, Roxbury, Mass.

Committee on School Gardens and Children's Herbariums.

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REPORT

OF THE

COMMITTEE ON NATIVE PLANTS

FOR THE YEAR 1901.

By Charles W. Jenks.

At the meeting of the Society May 4th last, it was voted "that Charles W. Jenks be appointed to award the prizes offered for Native Plants with liberty to call in the aid of such experts as he may think proper." As there have been no general exhibitions this year, there has been no work for your committee to do.

It seems to me, if the Society wishes to continue these exhibitions, which in past years have been so attractive to many visitors, a committee of three or five members should be chosen, as it is difficult for any one member to be present every Saturday, especially during the vacation season.

While I must decline to serve longer as the only member, I would be pleased to serve as one of three or five, should the Society so desire.

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REPORT

OF THE

Committee on Forestry and Roadside Improvement

FOR THE YEAR 1901.

By HARVEY N. SHEPARD, CHAIRMAN.

To the President and Members of the Massachusetts Horticultural Society:—

The Committee on Forestry and Roadside Improvement respectfully report:

The work referred to in our previous reports of keeping in touch with the tree wardens and others in the Commonwealth for the purpose of furthering the welfare of our roadside trees has been kept up more actively than ever, both in the collection of supplementary material and in the supplying of information and advice. The interest grows and the service rendered becomes more important. The classifying of the material also has gone forward steadily and as rapidly as possible, but cannot, we greatly regret, be completed in season for this report. In our judgment, the work should be kept up, and next year should see a valuable report upon it.

We have distributed this year about eight hundred copies of the Circulars from the Boston Society of Natural History relative to the Protection of Native Plants in connection with our own Circular, and about four hundred copies of the Circular of the American Park and Outdoor Art Association.

In co-operation with like committees from the Appalachian Mountain Club and the Massachusetts Forestry Association we

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met the Commissioners of the Greylock Reservation, made a careful examination of its condition, and have submitted previously to the three associations our unanimous opinions relative thereto.

The work begun upon another branch of our duties, in an endeavor to ascertain the economic value of wood planting in the Commonwealth, continues, and we trust to be able next year to make a report relative thereto.

The pamphlet containing the laws of the Commonwealth relative to forests and trees has been widely distributed, and the many communications sent to us show that it was greatly needed and has been of much value.

HARVEY N. SHEPARD,
NATHANIEL S. SHALER,
J. WOODWARD MANNING,
JAMES STURGIS PRAY,
HENRY S. HUNNEWELL,
Committee on Forestry and Roadside Improvement.

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REPORT

OF THE

COMMITTEE OF ARRANGEMENTS

FOR THE YEAR 1901.

By JOSEPH H. WOODFORD, CHAIRMAN.

The past year has been one of unusual experience as far as our exhibitions have been concerned. Owing to the sale of our old Hall on Tremont Street, and our having to vacate the premises on the first day of May last, we were unable, after that date, to hold any exhibitions until we could occupy our new Hall in November. Consequently, the duties of your Committee have been much lighter than they would have been had the new Hall been completed earlier in the season.

It may not be polite or courteous to the Building Committee to criticise their work or the unfinished condition of the interior of the new building, but we cannot pass over the fact that not one member of the working committees of our Society was consulted as to the size of the halls, the convenience of access, the adaptability for exhibitions, or the accommodation of an audience visiting the exhibitions.

In our report for the year 1895 we pointed out the inadequacy of our then accommodations, and at that time intimated that we should "have a hall of easy access and of sufficient capacity to accommodate any and all of our exhibitions, and at the same time capacious enough to contain a large audience comfortably."

You see what we have got. The main hall in this building is not as large as the two halls in the old. There is no space convenient in the new building for the storage of tables, etc., when

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out of use. The lights are too far away from the plants and flowers, and there is no accommodation for an audience.

To ameliorate these conditions, in part, we would recommend the digging out of the earth which was filled in, in the main hall, and covering the ground with a concrete floor; then extend a floor on the same level of the loggia over the whole space, thus bringing the exhibitions nearer the light, and, at the same time, affording sufficient storage accommodations for all furniture, etc., used in our exhibitions. Furthermore, we would recommend that three galleries be constructed, one on each side near the loggia, and one at the rear end of the hall, to accommodate the public, and when all this is done, to tint the walls some color which will not absorb light and destroy the color of flowers.

If these suggestions are carried out the alterations will in a great measure help the exhibitions and contribute to the comfort of an appreciative public.

The amount of money placed at the disposal of this Committee has only in part been expended, but that part judiciously and for the best interests of the Society. The receipts for admission to the two paying exhibitions, Spring and Chrysanthemum, show an increase over those of last year, which is extremely gratifying.

The Treasurer shows by his books receipts for the	
Spring Exhibition	$375 75
Chrysanthemum Exhibition	1,943 25
Making a total of	$2,319 00

which is in the Treasury of the Society.

Respectfully submitted,

JOSEPH H. WOODFORD,
ARTHUR H. FEWKES,
J. WOODWARD MANNING,
E. W. WOOD,
WARREN HOWARD HEUSTIS,
PATRICK NORTON,
ROBERT FARQUHAR,

Committee of Arrangements.

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REPORT

TO THE

STATE BOARD OF AGRICULTURE

FOR THE YEAR 1901.

This year has been a very important one in the history of the Massachusetts Horticultural Society, as it marks the removal from their old building to their new building, corner of Massachusetts and Huntington Avenues.

On the first of May, 1901, the old hall was transferred to a syndicate and the work of tearing down was begun.

The old Horticultural Hall was dedicated in 1865.

The Society, with the exception of the Pennsylvania Horticultural Society, the first of its kind in this country, was organized March 17, 1829, fully incorporated in June of the same year with one hundred and forty members. The first exhibition of any size was the "Spring Exhibition," held March 19th, at which many flowers and plants were shown.

The new building was opened to the public June 4th, 1901 with the most notable and beautiful display of flowers ever seen in Boston. It was pronounced by experts to be the finest show ever given in the country. It was truly a floral triumph, there being a remarkable display of orchids, azaleas and other plants. Credit for the arrangement of the exhibition is due to Prof. C. S. Sargent, assisted by Miss Beatrix Jones.

A departure was made at this exhibition by having the building open on Sunday; thousands took advantage of the opportunity thus offered.

Weekly summer exhibits of fruits and flowers were omitted this year.

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September 21st a meeting was held, and the building formally accepted by the Society.

In November the first real exhibition of the Society for prizes was held in the new building, the show in June being an opening exhibition of the building and not for premiums. This show, with the combination of Annual Chrysanthemum, Fruit, Plant, Flower and Vegetable Shows, offered opportunity for exhibitors from every department of horticulture, with a premium list of $3,000.

It was a very beautiful display, but I would suggest that the arrangement of flowers be left to one person, not to each exhibitor. In this manner combinations of color would be made more pleasing to the eye.

Respectfully submitted,

N. I. Bowditch,

Inspector.

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REPORT

OF THE

Committee on Lectures and Publication

FOR THE YEAR 1901.

The Committee on Lectures and Publication submit the following report: We have had the following lectures delivered the past year, commencing January 12 and closing the course March 30:

January 12. Hardy Evergreen Trees and Shrubs and their Uses. By J. Woodward Manning, Reading.

January 19. The Trees of our Neighborhood. By Miss Emma G. Cummings, Brookline.

January 26. A Visit to Kew Gardens and Hampton Court. By Benjamin P. Ware, Marblehead.

February 9. Growing and Exhibiting Vegetables and Fruits. By Herbert R. Kinney, Worcester.

February 16. The Advancement of Market Gardening in the past Twenty-five Years. By Michael Sullivan, Revere.

February 23. A Quarter-Century's Evolution in American Horticulture. By Patrick O'Mara, New York, N. Y.

March 9. Fruit Culture in New England and its Development the Last Fifty Years. By Hon. Aaron Low, Hingham.

March 16. Parasitic Fungi. By Professor George F. Atkinson, Cornell University, Ithaca, N. Y. This lecture was delivered on the John Lewis Russell foundation.

March 23. Twenty Years of Peach Growing in Massachusetts. By John W. Clark, North Hadley.

March 30. Insects Injurious to Fruits and Vegetables. By Professor H. T. Fernald, Amherst.

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As in former years, abstracts made from advance copies of the lectures have been printed in the *Evening Transcript* of the day when the lecture was delivered, and extra copies of these abstracts have been placed on the table on the next Saturday, and have been freely distributed and eagerly sought after. It is believed that no course of lectures has been listened to more attentively, or by larger audiences.

The Schedule of Prizes was, as hoped and anticipated, ready at the beginning of the year or a few days before, but the work on the TRANSACTIONS has been greatly hindered by the two removals of the Library and other property of the Society, which unavoidably consumed much of the time of the Secretary and Librarian and his assistants. And even now that we are comparatively settled, our distance from the business portion of the city is found a serious obstacle to the speedy printing of the Society's publications. Part II of 1900 has been printed and distributed during the year, and Part I for 1901 is nearly all in type.

Respectfully submitted,

AARON LOW,
JAMES H. BOWDITCH,
E. W. WOOD,
Committee.

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REPORT

OF THE

COMMITTEE ON THE LIBRARY

FOR THE YEAR 1901.

By WM. E. ENDICOTT, CHAIRMAN.

The number of books purchased this year has been much smaller than in many other years for the obvious reason that from April to October the library had no permanent quarters. A larger part of our appropriation than usual has been devoted to binding, very much of which has been done.

Our books have been moved twice during the year; in April from our old hall to the Tremont Building, and six months later to the present library room. These transfers were admirably planned and carried out, we believe, as well as could be done, but it was not possible to prevent damage entirely.

Of the present library room it is not necessary to say much, it speaks for itself; the Library Committee has had absolutely nothing to do with planning or furnishing it. It seems to us that much harm will come to the books unless glass doors be fitted to the cases, and it is obvious that the shelves, all of which are eight inches deep, are not adapted to take books fourteen inches wide; but these things, we hope, may soon be remedied.

At a recent meeting, the Society voted that any further furnishing of the library room should be entrusted to the Library Committee, and we shall give our earnest attention and endeavors to make good such defects as may be found to exist.

WM. E. ENDICOTT,
GEORGE W. HUMPHREY,
WALTER S. PARKER,
GEORGE E. DAVENPORT,
CHARLES W. SWAN,
Library Committee.

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REPORT

OF THE

SECRETARY AND LIBRARIAN

FOR THE YEAR 1901.

For many years the difficulty of avoiding in these reports from year to year an appearance of sameness has been remarked on, but this year the completion of the Society's new building and the removal to it of the library and all other departments of the Society's work, has made a break in that sameness which has not occurred before for thirty-five years, and is not likely to occur again for many more. Owing to the failure of the contractor to complete the new building by the time when our lease of the old one expired, it seemed expedient to hire temporary rooms for the deposit of the library, and a convenient suite of rooms in the Tremont Building, comprising, besides quiet and pleasant rooms for the accommodation of the library, a room for the meetings of the Society and Committees, were procured, these rooms being all fireproof. To them the books and bookcases were conveyed, and the former placed in the latter, so that they could be as well consulted as in the old room. Though this course involved two removals, instead of the one which we had hoped would be sufficient, it was undoubtedly better for the welfare of the books as well as for their usefulness, than if they had been stored in bulk in a storage warehouse. I regret, however, that it was not better understood among the members of the Society, that the books were as accessible for home use or consultation by them as they ever had been.

Both removals and rearrangements were affected in a skilful and expeditious manner under the immediate direction of Miss C. M. Endicott, who deserves much credit therefor. So far as is now known this was done without the loss of a single book, and so

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careful were the teamster and his assistants employed to convey them from place to place, that not one of the two hundred panes of glass (mostly large ones) in the bookcases was broken.

The want of increased accommodations as a serious obstacle to ready reference to many books was first brought to the attention of the Society by the Library Committee in their report in 1875. The bookcases added since have afforded a relief, which though indispensable, has never been sufficient to afford proper accommodation to the books, and it is a great satisfaction to feel that after the lapse of twenty-five years we have shelf room of such extent as not only to show the back of every book but to afford room for the additions of future years. But it is a great drawback to this satisfaction to be obliged to say that the shelves, with which the library was fitted by the Building Committee, were found so narrow that more than two thousand volumes are too large to be supported by them.

Not so many books have been purchased as in some previous years, but among those worthy of special mention are Rouy's Illustrationes Plantarum Europæ Rariorum, thus far comprising fifteen fascicles, with three hundred and seventy-five plates; thirteen volumes of Morot's Journal de Botanique; Saccardo's La Botanica in Italia; Theophrastus, de Historia Plantarum (the best edition); Torrey, Eddy and Knevels's Catalogue of Plants within thirty miles of the City of New York, Albany, 1819; Clute's Our Ferns in their Haunts; Gardens, Old and New; Miss Jekyll's Wall and Water Gardens; Mrs. Earle's Old Time Gardens; the Pomologie de la France, in eight volumes, with beautifully colored plates; Bailey's Principles of Vegetable Gardening; and Marshall's Mushroom Book. Fascicles 123-125 of Martius's Flora Brasiliensis; Vol. 3 of Bailey's Cyclopedia of American Horticulture; and the continuation of may other serial works have been received.

When the work of removal was begun, it was necessary to pursue it as far as possible to the exclusion of all other work, and consequently as much progress has not been made on the publications of the Society as I could have wished. The Schedule of Prizes of 1901 was as usual ready on the first of January, and we trust that that for 1902 will be equally prompt, but it must be understood that the distance of our location from any printing

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office is a serious obstacle to prompt despatch of such work. Part II of our Transactions for 1900 was issued early in the year, and Part I for 1901 is nearly all in type.

If I may return to the subject of the library, I would close this Report with the words with which Mr. Parkman, then Chairman of the Library Committee, closed his first report after the occupation of the Tremont Street Hall — "Our library may be said to bear to this noble building the relation which the brain bears to the body, and the Society is aware of the importance to its interests of replenishing and invigorating this vital part."

ROBERT MANNING,

Secretary and Librarian.

CORRECTION.

In Part I, 1901, of the Transactions, the names of two of the plates — *Tsuga Sieboldii* and *Thuya occidentalis* var. *aurea* — should be transposed.

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TREASURER'S REPORT.

FOR THE YEAR 1901.

MASSACHUSETTS HORTICULTURAL SOCIETY, *in account current with* CHARLES E. RICHARDSON, *December 31st, 1901.*

DR.

To amount paid on New Building			$197,913 28
" " " for Furniture and Exhibition Ware			449 65
" " " on account of Library	$416 66		
" " " from income of John S. Farlow fund	161 95		
" " " from income of J. D. Williams French fund	182 30		
			760 91
" " " Interest on funds for Prizes, credited opposite			2,026 06
" " " for Heating	$1,008 15		
" " " " Lighting	319 69		
" " " " Water rates	109 23		
" " " " Labor	2,098 50		
" " " " Stationery, Printing and Postage	1,905 36		
" " " " Incidentals	1,532 89		
" " " " Repairs	43 98		
" " " " " to Furniture, etc.	302 00		
" " " " Committee of Arrangements	175 30		
" " " " " on School Gardens and Children's Herbariums	50 64		
" " " " Lectures and Publications	255 00		
" " " " Committee on Forestry and Roadside Improvement	147 64		
" " " " Salaries of Treasurer, Secretary and Assistants	4,300 00		
" " " " Salaries of Committees	897 00		
" " " " Tax on So. Boston Property	140 06		
Amounts carried forward		$13,285 44	$201,149 90

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Amounts brought forward	$13,285 44	$201,149 90
To amount paid for Abating nuisance on So. Boston Property . .	55 48	
" " " " Electric Power . . .	37 53	
" " " " Rent of Building, 101 Tremont Street . . .	10,000 00	
" " " " Rent of Rooms in Tremont Building and Chickering Hall	1,858 31	
" " " " Legal Services . . .	58 70	
" " " " Storage	202 50	
		25,497 96
" " " " Prizes awarded in 1900, paid in 1901, viz.:		
H. H. Hunnewell Prizes for Rhododendrons	105 00	
Prizes for Plants	1,839 88	
" " Flowers	2,237 32	
" " Fruit	1,586 00	
" " Vegetables	1,181 50	
" " Gardens and Greenhouses .	451 80	
" " Native Plants	160 20	
" " School Gardens and Children's Herbariums	100 00	
		$7,661 70
		$234,309 56
Balance of Cash December 31st, 1901 . . .		26,481 72
		$260,791 28

CR.

By Balance of account rendered December 31st, 1900 . .			$74,864 73
" Building in 1901: —			
Rent of Halls . . .	$1,230 34		
" " Stores . . .	2,255 50		
		$3,485 84	
" Annual Exhibitions, Gross . .	2,319 00		
Less Expenses . . .	946 11		
		1,372 89	
" Admissions and Assessments . . .		1,246 00	
" Mt. Auburn Cemetery		4,641 00	
" State Bounty		600 00	
Amounts carried forward . .		$11,345 73	$74,864 73

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Amounts brought forward		$11,345 73	$74,864 73
By Interest on Bonds	$10,195 00		
" " " Loan	3,231 53		
" " " Bank Balances	720 80		
		14,147 33	
" Insurance		113 66	
" J. D. Williams French		5,000 00	
" Francis Brown Hayes Bequest		23,293 77	
" Loan on Call		130,000 00	
" Interest credited following Funds charged opposite:			
Samuel Appleton Fund	$50 00		
John A. Lowell "	50 00		
Theodore Lyman "	550 00		
Josiah Bradlee "	50 00		
Benjamin V. French "	25 00		
W. J. Walker "	117 72		
Levi Whitcomb "	25 00		
Benjamin B. Davis "	25 00		
Marshall P. Wilder "	50 00		
John Lewis Russell "	50 00		
H. H. Hunnewell "	200 00		
Francis Brown Hayes "	500 00		
Henry A. Gane "	50 00		
John S. Farlow "	100 00		
J. D. Williams French "	183 34		
		2,026 06	
			185,926 55
			$260,791 28

CHARLES E. RICHARDSON,
Treasurer.

Approved:

WALTER HUNNEWELL, } *Finance*
O. B. HADWEN, } *Committee.*

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AUDITOR'S CERTIFICATE.

28 State Street, Boston, February 18th, 1902.

MESSRS. WALTER HUNNEWELL,
ARTHUR F. ESTABROOK,
O. B. HADWEN,

Finance Committee of the
Massachusetts Horticultural Society.

Gentlemen:—In compliance with your request, I made a thorough audit of the books and general accounting affairs of the Massachusetts Horticultural Society for the year which ended with the 31st day of December, 1901, and herewith submit to you my report of the same.

Report.

I added the ledger, journal and cash book and the small books tributary to the cash book and saw that all balances were correctly carried forward. I examined and checked the vouchers representing the disbursements during the year and found the amount of cash required by the cash book upon the first day of January, 1902, to have been on hand, and also examined the securities of the Society in the custody of the Treasurer and found that they were in all instances in accordance with the requirements of the record. I traced all postings from the journal and cash book into the ledger and proved the correctness of the balance sheet taken from the ledger as of the 31st day of December, 1901, which is a true statement of the financial condition of the Society upon said date, to the best of my knowledge and belief.

In short, I satisfied myself that the work in connection with the accounting affairs of the Society was being conscientiously and honestly performed, and that there was every evidence of faithfulness upon the part of the Treasurer.

Yours very respectfully,

ANDREW STEWART,
Examiner of Accounts.

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ASSETS AND LIABILITIES OF THE MASSACHUSETTS HORTICULTURAL SOCIETY.

DECEMBER 31, 1901.

ASSETS.

Real Estate		$515,997 36
Furniture and Exhibition Ware		8,157 15
Library		40,573 38
Stereotype plates and copies of History		246 50
Sinking Fund		23,872 50
Chicago, Burlington & Quincy R. R. Bonds		1,000 00
Kansas City, Clinton & Springfield " "		1,980 00
Lake Shore & Michigan Southern " "		10,415 25
Atchison, Topeka & Santa Fé " "		44,693 25
Chicago, Burlington & Quincy, "Nebraska Extension" R. R. Bonds		50,012 50
Chicago & West Michigan R. R. Bonds		9,987 50
Kansas, Fort Scott & Memphis R. R. Bonds		27,523 75
Chicago, Burlington & Quincy, Illinois Division R. R. Bonds		51,625 00
City of Newton Bonds		24,228 75
W. A. Hayes and A. P. Loring, Trustees		3,488 76
Cash		26,481 72
		$840,283 37

LIABILITIES.

Prize Funds invested in Bonds:			
Samuel Appleton Fund,	$1,000 00		
John A. Lowell "	1,000 00		
Theodore Lyman "	11,000 00		
Josiah Bradlee "	1,000 00		
Benjamin V. French "	500 00		
H. H. Hunnewell "	4,000 00		
W. J. Walker "	2,354 43		
Levi Whitcomb "	500 00		
Benjamin B. Davis "	500 00		
Marshall P. Wilder "	1,000 00		
J. Lewis Russell "	1,000 00		
Francis Brown Hayes "	10,000 00		
Henry A. Gane "	1,000 00		
John S. Farlow "	2,500 00		
J. D. Williams French "	5,000 00		
		$42,354 43	
Prizes for 1901 payable in 1902		8,200 00	
			$50,554 43
Surplus			789,728 94
			$840,283 37

CHARLES E. RICHARDSON,
Treasurer.

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Membership Account of the Massachusetts Horticultural Society, December 31st, 1901.

Life Membership per last report	682		
Added in 1901	23		
Commuted from Annual	7		
		712	
Deceased	26		
			686
Annual Membership per last report	199		
Added in 1901	7		
		206	
Commuted to Life	7		
Deceased	5		
Resigned	3		
Dropped for non-payment for two years	7		
		22	
			184
Present Membership			870

INCOME FROM MEMBERSHIP.

23 new Life Members @ $30	$690 00
7 Commuted to Life @ $20	140 00
7 new Annual Members @ $10	70 00
Assessments	346 00
	$1,246 00

CHARLES E. RICHARDSON,
Treasurer.

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Dr. *Massachusetts Horticultural Society in account with the Proprietors of the Cemetery of Mount Auburn.* **Cr.**

For Sales and Improvements within the Cemetery for the year ending December 31st, 1901.

To cost of filling up and improving land at Mount Auburn for the year ending December 31st, 1901. The Massachusetts Horticultural Society being charged with their proportion of same:			By Sales in January		$1,115 00
			" " " February		600 00
			" " " March		40 00
			" " " April		1,462 50
			" " " May		4,689 50
			" " " June		3,423 20
			" " " July		732 00
			" " " August		1,151 00
			" " " September		1,610 00
			" " " October		2,995 00
			" " " November		1,480 00
			" " " December		70 00
					$19,368 20
Rear of Walnut Avenue and Fern Path	$380 78		Net amount received from Receiving Tomb		1,193 00
Magnolia Avenue	3 15				$20,561 20
Between Cherry and Birch Avenues	150 38		Less graves repurchased		40 00
Glen Avenue	22 88				$20,521 20
	$557 19		Deduct for Annual Expense		1,400 00
					$19,121 20
One-fourth part of $557.19	$139 30		One-fourth of $19,121.20		$4,780 30
Balance due Mass. Horticultural Society,	4,641 00				
	$4,780 30				

E. & O. E.

JOHN L. DILL, *Treasurer.*

Boston, December 31, 1901.

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THE MASSACHUSETTS HORTICULTURAL SOCIETY

To the PROPRIETORS OF THE CEMETERY OF MOUNT AUBURN. *Dr.*

To cost of filling up and improving land at Mount Auburn for the year ending Dec. 31st, 1901. The Massachusetts Horticultural Society being charged with their proportionate part.

Rear of Walnut Avenue and Fern Path.

130.4 days, man	$293 40	
23.3 days, man and horse	87 38	
		$380 78

Magnolia Avenue.

1.4 days, man	$3 15	3 15

Between Cherry and Birch Avenues.

40.1 days, man and horse	150 38	150 38

Glen Avenue.

6.1 days, man and horse	22 88	22 88
		$557 19
One-fourth of $557.19		$139 30

JAMES C. SCORGIE,
Supt. of the Cemetery of Mount Auburn.

MOUNT AUBURN, December 31, 1901.

I certify the above to be a true copy of improvements for the year 1901 as rendered by the Superintendent.

JOHN L. DILL,
Treasurer.

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Massachusetts Horticultural Society.

OFFICERS AND STANDING COMMITTEES FOR 1902.

President.

O. B. HADWEN, of Worcester.

Vice-Presidents.

BENJAMIN P. WARE, of Clifton.

SAMUEL HOAR, of Concord.

JOSEPH R. LEESON, of Newton Centre.

OAKES AMES, of North Easton.

Treasurer and Superintendent of the Building.

CHARLES E. RICHARDSON, of Brookline.

Secretary and Librarian.

ROBERT MANNING, of Salem.*

Professor of Botany and Vegetable Physiology.

BENJAMIN M. WATSON, of Jamaica Plain.

Professor of Entomology.

SAMUEL H. SCUDDER, of Cambridge.

Delegate to the State Board of Agriculture.

WILLIAM H. SPOONER, of Jamaica Plain.

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* Communications to the Secretary, on the business of the Society, should be addressed to him at Horticultural Hall, Boston.

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STANDING COMMITTEES.

Executive.

THE PRESIDENT, O. B. HADWEN, CHAIRMAN.

THE CHAIRMAN OF THE FINANCE COMMITTEE, WALTER HUNNEWELL, *Ex officio*.

WILLIAM C. STRONG.
WILLIAM H. SPOONER.
NATHANIEL T. KIDDER.
FRANCIS H. APPLETON.
BENJAMIN C. CLARK.
CHARLES W. PARKER.
CHARLES F. CURTIS.

Finance.

WALTER HUNNEWELL, OF BOSTON, CHAIRMAN.

O. B. HADWEN.
ARTHUR F. ESTABROOK.

Lectures and Publication.

AARON LOW, OF HINGHAM, CHAIRMAN.

JAMES H. BOWDITCH.
E. W. WOOD.

Library.

WILLIAM E. ENDICOTT, OF CANTON, CHAIRMAN.

GEORGE W. HUMPHREY.
WALTER S. PARKER.
GEORGE E. DAVENPORT.
CHARLES W. SWAN.

Plants.

ARTHUR H. FEWKES, OF NEWTON HIGHLANDS, CHAIRMAN.

JAMES WHEELER.
WILLIAM J. MARTIN.
ROBERT CAMERON.
ROBERT MELROSE GREY.

Flowers.

J. WOODWARD MANNING, OF READING, CHAIRMAN.

MICHAEL H. NORTON.
KENNETH FINLAYSON.
FREDERICK S. DAVIS.
JAMES COMLEY.

Fruits.

E. W. WOOD, OF WEST NEWTON, CHAIRMAN.

CHARLES F. CURTIS.
WARREN FENNO.
J. WILLARD HILL.
GEORGE F. PIERCE.
JOHN L. BIRD.
FREDERICK W. DAMON.

Vegetables.

WARREN H. HEUSTIS, OF BELMONT, CHAIRMAN.

VARNUM FROST.
WALTER RUSSELL.
AARON LOW.
GEORGE D. MOORE.
JOSHUA C. STONE.
MICHAEL SULLIVAN.

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Forestry and Roadside Improvement.

HARVEY N. SHEPARD, CHAIRMAN.

NATHANIEL S. SHALER. HENRY S. HUNNEWELL.
J. WOODWARD MANNING. JAMES STURGIS PRAY, SECRETARY.

Gardens.

PATRICK NORTON, OF DORCHESTER, CHAIRMAN.

CHAIRMEN OF THE COMMITTEES ON PLANTS, FLOWERS, FRUITS, VEGETABLES, AND ARRANGEMENTS, *Ex officiis.*

HENRY W. WILSON. JACKSON T. DAWSON.

For Establishing Prizes.

WILLIAM H. ELLIOTT, OF BRIGHTON, CHAIRMAN.

CHAIRMEN OF THE COMMITTEES ON PLANTS, FLOWERS, FRUITS, VEGETABLES, AND GARDENS, *Ex officiis.*

WILLIAM J. MARTIN.

Committee of Arrangements.

JOSEPH H. WOODFORD, OF BOSTON, CHAIRMAN.

CHAIRMEN OF THE COMMITTEES ON PLANTS, FLOWERS, FRUITS, VEGETABLES, AND GARDENS, *Ex officiis.*

ROBERT FARQUHAR.

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MEMBERS FOR LIFE.

Members of the Society and all other persons who may know of deaths, changes in residence, or other circumstances showing that the following list is incorrect in any particular, will confer a favor by promptly communicating to the Secretary any needed corrections.

Information, or any clew to it, is especially desired in regard to members whose names are marked thus.†

Adams, Mrs. Charles Francis, South Lincoln.
Adams, Henry Saxton, Boston.
Alger, Rev. R. F., Dorchester.
Allen, Hon. Charles H., Lowell.
Allen, Thomas, Boston.
Ames, F. Lothrop, North Easton.
Ames, Mrs. F. L., North Easton.
Ames, George, Boston.
Ames, John S., North Easton.
Ames, Miss Mary S., North Easton.
Ames, Oakes, North Easton.
Ames, Oliver, North Easton.
Ames, Mrs. Oliver, Sr., North Easton.
Ames, Preston Adams, Boston.
Ames, Miss Susan E., North Easton.
Amory, C. W., Boston.
Amory, Frederick, Boston.
Anderson, Larz, Brookline.
Andrews, Charles L., Milton.
Andrews, Frank W., Washington, D. C.
Andros, Milton, San Francisco, Cal.
Appleton, Francis H., Boston.
Appleton, William S., Boston.
Arnold, Mrs. George Francis, Brookline.
Ash, John, Pomfret Centre, Conn.
Asmus, Ernst G., West Hoboken, N. J.
Atkins, Edwin F., Belmont.
Ayer, James B., Boston.

Bailey, Jason S., West Roxbury.
Baker, James E., South Lincoln.
Ball, George H., Boston.
Banfield, Francis L., M.D., Worcester.
Barber, J. Wesley, Newton.
Barnard, James M., Boston.
Barnard, Robert M., Everett.
Barnes, Walter S., Somerville.
† Barney, Levi C., Boston.
Barry, John Marshall, Boston.
Barry, William C., Rochester, N. Y.
Bartlett, Edmund, Newburyport.
Bartlett, Francis, Beverly.
Bartlett, Miss Mary F., Boston.
Bates, Miss Mary D., Ipswich.
Baylies, Walter C., Taunton.
Beal, Leander, Swampscott.
Becker, Frederick C., Cambridge.
Beckford, Daniel R., Jr., Dedham.
Beebe, E. Pierson, Boston.
Beebe, Franklin H., Boston.
Beebe, J. Arthur, Boston.
Bigelow, Albert S., Cohasset.
Bigelow, Joseph S., Cohasset.
Bigelow, Dr. William Sturgis, Boston.
Black, George N., Manchester.

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Blake, Miss Anne, Brookline.
Blake, Mrs Arthur W , Brookline.
Blake, Edward D., Boston.
Blake, Francis, Weston.
Blake, Frederick A., Rochdale.
Blakemore, John E., Roslindale.
Blanchard, John W., West Newton.
Blinn, Richard D., Chicago, Ill.
Bliss, William, Boston.
Boardman, Samuel M., Hyde Park.
Boardman, T. Dennie, Manchester.
Bôcher, Prof. Ferdinand, Cambridge.
Bockus, Charles E., Dorchester.
Bosler, Frank C., Carlisle, Penn.
Bowditch, Charles P., Jamaica Plain.
Bowditch, Ernest W., Milton.
Bowditch, James H., Brookline.
Bowditch, Nathaniel I., Framingham.
Bowditch, William E., Roxbury.
Bowker, William H., Boston.
Brackett, Cephas H., Newton.
Breck, Joseph Francis, Allston.
Bremer, Mrs. John L., Manchester.
Bresee, Albert, Hubbardton, Vt.
Brewer, Francis W., Hingham.
Briggs, William S., Lincoln.
Brigham, William T., Honolulu, Hawaii.
Brooks, Henry, Lincoln.
Brooks, J. Henry, Milton.
Brooks, Lawrence, Groton.
Brooks, Peter C., Boston.
Brooks, Shepherd, Boston.
Brown, Alfred S., Jamaica Plain.
Brown, Edward J., Weston.
Brown, George Barnard, Brookline.
Brown, John M., Belmont.
Brown, Samuel N., Boston.
Burlen, William H., Boston.
Burnett, Harry, Southborough.
Burnham, John A , Manchester.
Burnham, Lamont G., Essex.
Burr, Matthew H., Hingham.
Buswell, Frank E., Brooklyn, N Y.
Butler, Aaron, Wakefield.
Butler, Edward K., Jamaica Plain.
Cabot, Dr. Arthur T., Boston.
†Cadness, John, Flushing, N. Y.
Cains, William, South Boston.
Calder, Augustus P., Boston.
Cameron, Robert, Cambridge.
Campbell, Francis, Cambridge.
Capen, John, Boston.
Carlton, Samuel A., Boston.
Carr, Hon. John, Roxbury.
Carter, Charles N., Boston.
Carter, Miss Maria E., Woburn.
Cartwright, George, Dedham.
Casas, W. B. de las, Malden.
Chadbourne, Marshall W., East Watertown.
Chaffin, John C., Newton.
Chamberlain, Chauncy W., Brookline.
†Chase, Andrew J., Lynn.
Chase, Daniel E., Somerville.
Chase, George B., Dedham.
Chase, William M., Dorchester.
Cheney, Amos P , Natick.
Cheney, Mrs. Elizabeth S., Wellesley.
Childs, Nathaniel R., Boston.
Choate, Charles F., Southborough.
Christie, William, Chelsea.
Claflin, Hon. William, Newtonville.
Clapp, Edward B., Dorchester.
Clapp, James H., Dorchester.
Clapp, William C., Dorchester.
Clark, Benjamin C., Boston.
Clark, B. Preston, Cohasset.
Clark, Miss Eleanor J., Pomfret Centre, Conn.
Clark, J. Warren, Rockville.
Clarke, Miss Cora H., Boston.
Clarke, Eliot C., Boston.
Cleary, Lawrence, Roxbury.
Clough, Micajah Pratt, Lynn.
Cobb, John C., Milton.
Coburn, Isaac E., Everett.
Codman, James M., Brookline.
Codman, Ogden, South Lincoln.
Coe, Miss Mary Alma, Boston.

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Coffin, Abraham B., Winchester.
Cole, Edward E., Boston.
Collamore, Miss Helen, Boston.
Colton, Samuel H., Worcester.
Converse, Elisha S., Malden.
Converse, Col. H. E., Malden.
Coolidge, Joshua, Mount Auburn.
Coolidge, J. Randolph, Chestnut Hill.
Coolidge, Mrs. J. Randolph, Chestnut Hill.
Coolidge, T. Jefferson, Jr., Boston.
Cottle, Henry C., Boston.
Cox, Thomas A., Dorchester.
Coy, Samuel I., Boston.
Craig, William Nicol, North Easton.
Crane, Zenas, Dalton.
Crawford, Dr. Sarah M., Roxbury.
Crocker, Hon. George G., Boston.
Crocker, Miss S. H., Boston.
Crosby, George E., West Medford.
Cross, Alfred Richard, Nantasket.
Crowell, Randall H., Watertown.
Curtis, Charles F., Jamaica Plain.
Curtis, Charles P., Swampscott.
Curtis, Charles P, Jr., Boston.
Cushing, Livingston, Weston.
Cushing, Robert M., Boston.
Cutting, Gen. Walter, Pittsfield.

† Daggett, Henry C., Boston.
Dalton, Charles H., Beverly.
Daly, John C., Roxbury.
Damon, Frederick W., Arlington.
Dana, Charles B., Wellesley.
Daniels, Dr. Edwin A., Boston.
Davenport, Albert M., East Watertown.
Davenport, George E., Medford.
Davis, Edward L., Worcester.
Davis, John, Lowell.
Davis, L. Shannon, Brookline.
Dawson, Jackson T., Jamaica Plain.
Dee, Thomas W., Cambridge.
Denny, Clarence H., Boston.
Denton, Eben, Dorchester.
Dexter, F. Gordon. Boston.
Dexter, George, Beverly.
Dike, Charles C., Stoneham.
Doliber, Thomas, Brookline.
Donald, William, West Roxbury.
Donaldson, James, Roxbury.
Dorr, George, Dorchester.
Dove, George W. W., Andover.
Dowse, William B. H., West Newton.
Draper, Hon. Eben S., Hopedale.
Draper, George A., Hopedale.
Dreer, William F., Philadelphia, Pa.
Dumaresq, Herbert, Chestnut Hill.
Duncan, James L., Chelsea.
Dunlap, James H., Nashua, N. H.
Durant, William, Boston.
Durfee, George B., Fall River.
Dutcher, Frank J., Hopedale.
Dwight, Theodore F., Kendal Green.

Eaton, Horace, Cambridge.
Edgar, William W., Waverly.
Eldredge, H. Fisher, Boston.
† Eldridge, E. H., Roxbury.
Elliot, Mrs. John W., Boston.
Elliott, William H., Brighton.
Endicott, William. Boston.
Endicott, William, Jr., Boston.
Endicott, William C., Jr., Danvers.
Endicott, William E., Canton.
Estabrook, Arthur F, Boston.
Ewell, Warren, Dorchester.

Fairchild, Charles, Boston.
Falconer, William, Pittsburgh, Pa.
Farlow, Lewis H., Newton.
Farnsworth, Mrs. William, Dedham.
Farquhar, James F. M., Roslindale.
Farquhar. John K. M. L., Roxbury.
Farquhar, Robert, North Cambridge.
Faxon, John, Quincy.
Fay, H. H., Wood's Holl.
Fay, Joseph S., Jr., Wood's Holl.
Fenno, L. Carteret, Boston.
Fessenden, George B., Allston.
Fewkes, Arthur H., Newton Highlands.

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Finlayson, Kenneth, Brookline.
Fisher, Peter, Ellis.
Flagg, Augustus, Boston.
Fletcher, George V., Belmont.
Fletcher, J. Henry, Belmont.
Fletcher, John W., Chelsea.
Flint, David B., Boston.
Foster, Charles H. W., Brookline.
Foster, Francis C., Cambridge.
Fottler, John, Jr., Dorchester.
Fowle, George W., Jamaica Plain.
Fowle, William B., Auburndale.
French, Miss Caroline L. W. Boston.
French, S. Waldo, Jamaica Plain.
French, W. Clifford, Cambridge.
Frohock, Roscoe R., Malden.
Frost, Irving B., Belmont.
Frost, Varnum, Arlington.

Galloupe, Charles W., Swampscott.
Galvin, John, Boston.
Gardner, Mrs. Augustus P., Hamilton,
Gardner, George A., Boston.
Gardner, George P., Boston.
Gardner, John L., Boston.
Gardner, Mrs. John L , Brookline.
Gardner, William Amory, Groton.
Gaston, William A., Boston.
Gibbs, Wolcott, M.D., Newport, R.I.
Gill, George B., Medford.
Gillard, William, Dorchester.
Gilmore, E. W., North Easton.
Gilson, F. Howard, Wellesley Hills.
Glover, Joseph B., Boston.
Goddard, Joseph, Sharon.
Goodell, L. W., Dwight.
Gorham, James L., Jamaica Plain.
† Gould, Samuel, Boston.
Gowing, Mrs. Clara E., Kendal Green.
Gray, James, Wellesley.
Gray, Mrs. John C., Boston.
Gregory, Hon. James J. H., Marblehead.
Grew, Edward S., Boston.
Grey, Benjamin, Malden.

Hadwen, Obadiah B., Worcester.
Hale, James O., Byfield.
Hall, Edwin A., Cambridgeport.
Hall, George A., Chelsea.
Hall, Jackson E., Boston.
Hall, Osborn B., Malden.
Hall, William F., Brookline.
Halliday, William H., South Boston.
Hammond, Gardiner G , New London, Conn.
Hammond, George W., Boston.
† Harding, George W., Arlington.
Harding, Louis B., Chestnut Hill.
Hardy, F. D., Cambridgeport.
Harlow, James F., Quincy.
Harris, Charles, Cambridge.
Harris, Thaddeus William, A.M., Keene, N. H.
Hartshorn, Arthur E., Worcester.
Harwood, George Fred, Newton.
Haskell, Edwin B., Auburndale.
Hastings, Levi W., Brookline.
Hatch, Mrs. C. S., North Cambridge.
Hatch, Edward, Boston.
Haven, Franklin, Boston.
Hawken, Mrs. Thomas, Rockland, Me.
Hayward, George P., Roxbury.
† Hazeltine, Hazen, Boston.
Hemenway, Augustus, Canton.
Hemenway, Mrs. Augustus, Canton.
Henshaw, Joseph P. B., Boston.
Henshaw, Samuel, Cambridge.
Heurlin, Julius, South Braintree.
Hewett, Miss Mary C., Canton.
Hews, Albert H., North Cambridge.
Higginson, Francis L., Boston.
Hilbourn, A. J., Boston.
Hill, John, Stoneham.
Hittinger, Jacob, Mt. Auburn.
Hoar, Samuel, Concord.
Hodgkins, John E., Portsmouth, N.H.

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Hoitt, Hon. Charles W., Nashua, N. H.
Hollingsworth, Amor L., Milton.
Hollingsworth, Z. T., Boston.
Hollis, George W., Grantville.
Holmes, Edward J., Boston.
Holt, Gustavus C., Belmont.
Holt, Mrs. Stephen A., Cambridge.
Holt, William W., Winchester.
Hooper, William, Boston.
Horner, Mrs. Charlotte N.S., Georgetown.
Horsford, Miss Kate, Cambridge.
Hovey, Charles H., South Pasadena, Cal.
Hovey, Stillman S., Woburn.
Howard, Joseph W., Somerville.
Hubbard, Charles Wells, Weston.
Hubbard, James C., Everett.
Humphrey, George W., Dedham.
Hunnewell, Arthur, Wellesley.
Hunnewell, Henry Sargent, Wellesley.
Hunnewell, H. Hollis, Wellesley.
Hunnewell, Walter, Wellesley.
Hunt, Dudley F., Reading.
Hunt, Francis W., Melrose.
Hunt, Franklin, Charlestown, N. H.
Hunt, William H , Concord.

Jack, John George, Jamaica Plain.
Jackson, Charles L., Cambridge.
Jackson, Robert T., Boston.
James, George Abbot, Nahant.
Janvrin, William S., Revere.
Jeffries, William A., Boston.
Jenks, Charles W., Bedford.
Johnson, J. Frank, Malden.
Jones, Jerome, Brookline.
Jones, Dr. Mary E., Boston.
Jordan, Eben D., Boston.
Jordan, Henry G., Hingham.
Jose, Edwin H., Cambridgeport.

Kakas, Edward, West Medford.
Kellen, William V., Marion.
Kelley, George B., Jamaica Plain.
Kendall, D. S., Woodstock, Ont.
Kendall, Edward, Cambridgeport.
† Kendall, Joseph R., San Francisco, Cal.
Kendall, Dr. Walter G., Atlantic.
Kendrick, Mrs. H. P., Allston.
Kennedy, George G., M. D., Roxbury.
Kent, John, Chestnut Hill.
Keyes, John M., Concord.
Kidder, Charles A., Southborough.
Kidder, Nathaniel T., Milton.
† Kimball, A. P., Boston.
Kimball, David P., Boston.
King, D. Webster, Boston.
Kingman, Abner A., Brookline.
Kingman, C. D., Middleborough.
Kinney, H. R., Worcester.
Knapp, Walter H., Newtonville.

Lamb, Horatio A., Milton.
Lancaster, Charles B., Boston.
Lanier, Charles, Lenox.
Lawrence, Amory A., Boston.
Lawrence, Amos A., Boston.
Lawrence, James, Groton.
Lawrence, John, Groton.
Lawrence, Rt. Rev. William, Boston.
Learned, Charles A., Arlington.
Lee, Daniel D., Jamaica Plain.
Lee, Francis H., Salem.
Lee, George C., Newton.
Leeson, Hon. Joseph R., Newton Centre.
Lemme, Frederick, Charlestown.
Leuchars, Robert B., Dorchester.
Lincoln, George, Hingham.
Lincoln, Col. Solomon, Boston.
Little, James L., Brookline.
Little, John Mason, Swampscott.
Locke, Edwin F., West Medford.
Locke, Isaac H., Belmont.
Lockwood, Rhodes, Boston.
Lodge, Richard W., Boston.

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Loftus, John P., Dorchester.
Loomis, Elihu G., Bedford.
Loring, Augustus P., Beverly.
Loring, Mrs. William Caleb, Beverly.
Lothrop, William S. H , Boston.
† Lowder, John, Watertown.
Lowell, Abbott Lawrence, Boston.
Luke, Otis H., Brookline.
Lumb, William, Boston.
Lunt, William W., Hingham.
Lyman, George H., Wareham.
Lyman, Mrs. Theodore, Brookline.

Mabbett, George, Plymouth.
Mackie, George, M. D., Attleboro.
† Mahoney, John, Boston.
Mallett, E. B., Jr., Freeport, Me.
Mann, James F., Ipswich.
Manning, Jacob W., Reading.
Manning, J. Woodward, Reading.
Manning, Mrs. Lydia B., Reading.
Manning, Robert, Salem.
Manning, Warren H., Brookline.
Marshall, Frederick F., Everett.
Marston, Howard, Boston.
Mason, Miss Ellen F., Boston.
Mason, Col. Frederick, Taunton.
Matthews, Nathan, Boston.
May, Frederick W. G., Boston.
McCarty, Timothy, Providence, R. I.
McWilliam, George, Whitinsville.
Melvin, James C., West Newton.
Merriam, Charles, Boston.
Merriam, Herbert, Weston.
Merrill, Hon. Moody, Roxbury.
Metivier, James, Cambridge.
Milmore, Mrs. Joseph, Washington, D. C.
Minot, Charles S., Milton.
Minton, James, Boston.
Mitton, Edward J., Brookline.
Mixter, George, Boston.
Monteith, David, Dedham.
Montgomery, Alexander, Natick.
Moore, George D., Arlington.
Moore, John H., Concord.
Morgan, George H., New York, N. Y.
Morse, John T., Jr., Boston.
Morse, Robert M., Jamaica Plain.
Moseley, Charles H., Dorchester.
Mudge, George A., Portsmouth, N. H.
Murdock, Albert L., Boston.
Murphy, William Bowen, Boston.
Murray, Peter, Fairhaven.
Mutch, John, Brookline.

Nevins, Mrs. David, Methuen.
Newman, John R., Winchester.
Newton, Rev. William W., Pittsfield.
Nickerson, Mrs. George A., Dedham.
Norton, Charles W., Allston.
Norton, Edward E., Boston.

Oakman, Hiram A., North Marshfield.
Olmsted, Frederick Law, Jr., Brookline.
Olmsted, John C., Brookline.
Orpet, Edward O., South Lancaster.

Page, Mrs. Henrietta, Boston.
Paige, Clifton H., Mattapan.
Parker, Charles W., Boston.
Parkman, Henry, Boston.
Parsons, John E., Lenox.
Partridge, Horace, North Cambridge.
Patten, Marcellus A., Tewksbury.
Paul, Alfred W., Dighton.
Peabody, Francis H., Boston.
Peabody, George A., Danvers.
Peabody, John E., Salem.
Peabody, S. Endicott, Salem.
Peck, O. H., Denver, Col.
Peck, William G , Arlington.
Peirce, Miss Marion W., Topsfield.
† Perry, George W., Malden.
Pfaff, Col. Charles, South Framingham.
Philbrick, William D., Newton Centre.
Phillips, John C., North Beverly.
Phillips, Mrs. John C., North Beverly.

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Phillips, William, North Beverly.
Pierce, Dean, Brookline.
Pierce, Elisha N., Waltham.
Pierce, George Francis, Neponset.
Pond, Preston, Winchester.
Poor, John R., Brookline.
Pope, Col. Albert A., Cohasset.
Porter, Alexander S., Boston.
Porter, James C., Wollaston.
Porter, Hon. Joseph S., Washington, D. C.
Prang, Louis, Boston.
Pratt, Laban, Dorchester.
Pratt, Lucius G., West Newton.
Pratt, Robert M., Boston.
Prendergast, J. M., Boston.
Prescott, Eben C., New York, N. Y.
Pringle, Cyrus G., Charlotte, Vt.
Proctor, T. E., Boston.
Prouty, Gardner, Littleton.
Putnam, George, Manchester.
Putnam, George J., Brookline.
Putnam, Joshua H., Newton Centre.

Quinby, Hosea M., M.D., Worcester.

Raddin, Everett W., North Cambridge.
Rand, Harry S., North Cambridge.
Rand, Oliver J., Cambridgeport.
Rawson, Warren W., Arlington.
Ray, James F., Franklin.
Raymond, Walter, Boston.
Read, Charles A., Manchester.
Reardon, John B., Boston.
Reed, Henry R., Jamaica Plain.
Rice, George C., Worcester.
Richards, John J., Boston.
Richardson, Charles E., Brookline.
Richardson, Dr. William L., Boston.
Rinn, J. Ph., Boston.
Ripley, Charles, Dorchester.
Ripley, Ebed L., Hingham Centre.
Robbins, I. Gilbert, Melrose Highlands.
Robinson, John, Salem.
Robinson Joseph B , Dorchester.
Robinson, Warren J., Somerville.
Rogers, Mrs. Jacob C., Peabody.
Roland, Thomas, Nahant.
Rothwell, James E., Brookline.
Roy, David Frank, Malden.
Ruddick, William H., M.D., South Boston.
Russell, George, Woburn.
Russell, James S., Milton.
Russell, Hon. John E., Leicester.
Russell, Walter, Arlington.

Salisbury, William C. G., Brookline.
Saltonstall, Richard M., Newton.
Sanford, Oliver S., Hyde Park.
Sanger, Mrs. George P., Boston.
Sargent, Andrew Robeson, Brookline.
Sargent, Charles S., Brookline.
Sargent, Mrs. Charles S., Brookline.
Sargent, Mrs. Francis W., Wellesley.
Sawtelle, Eli A., Boston.
Sawyer, Timothy T., Boston.
Scorgie, James C , Cambridge.
†Scott, Charles, Newton.
Sears, Miss Clara E., Boston.
Sears, Miss Emily E., Boston.
Sears, Dr. Henry F., Boston.
Sears, J. Montgomery, Boston.
Sears, Mrs. J. Montgomery, Boston.
Shaler, Nathaniel S., Cambridge.
Sharp, Miss Helen, Boston.
Shaw, Christopher C., Milford, N. H.
Shaw, Francis, Wayland.
Shaw, Mrs. Robert G., Wellesley.
Sherman, William H., Boston.
Shorey, John L., Lynn.
Shuman, Hon. A., Roxbury.
Shurtleff, Josiah B., Jr., Revere.
Sias, Charles D., Wenham.
Siebrecht, H. A., New Rochelle, N.Y.
Simpkins, Miss Mabel, Yarmouth.
Skinner, Francis, Boston.
Skinner, Francis, Jr., Boston.

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Sleeper, Henry Davis, Boston.
Smith, Archibald, West Somerville.
Smith, Calvin W., Wellesley Hills.
Smith, Charles H., Newton Highlands.
Smith, Charles S., Lincoln.
Smith, Edward N., San Francisco, Cal.
Smith, George O., East Lexington.
Smith, Thomas Page, Waltham.
Snow, Eugene A., Melrose.
Sohier, Col. William D., Beverly.
Souther, Charles H., Jamaica Plain.
Spaulding, Edward, West Newton.
Speare, Alden, Newton Centre.
Spooner, William H., Jamaica Plain.
Sprague, Hon. Charles F., Brookline.
Sprague, Isaac, Wellesley Hills.
Springall, George, Malden.
Stearns, Charles H., Brookline.
Stearns, Frank W., Newton.
Stedman, Henry R., M. D., Roslindale.
Stevens, Hon. Moses T., Andover.
Stewart, William J., Winchester.
Stone, Charles A., Newton.
Stone, Charles W., Boston.
Stone, Prof. George E., Amherst.
Stone, George F., Chestnut Hill.
Strater, Herman, Roxbury.
Strong, William C., Waban.
Swain, Charles E., Roxbury.
Sweet, Everell F., Malden.

Talbot, Mrs. I. Tisdale, Boston.
Taylor, Charles H., Boston.
Taylor, Horace B., Portland, Me.
Temple, Felker L., Boston.
Tenney, C. H., Methuen.
Thatcher, William, Brookline.
Thayer, Mrs. Alice R., Boston.
Thayer, Bayard, Lancaster.
Thayer, Mrs. Bayard, Lancaster.
Thayer, Eugene V. R., South Lancaster.
Thayer, Mrs. Eugene V. R., South Lancaster.
Thayer, John E., South Lancaster.
Thayer, Mrs. John E., South Lancaster.
Thayer, Nathaniel, Lancaster.
Thayer, Mrs. Nathaniel, Lancaster.
Thayer, S. V. R., Boston.
Thiemann, Hermann, Manchester.
Thomas, W. B., Manchester.
Thurlow, Thomas C., West Newbury.
Tilton, Stephen W., Roxbury.
Todd, John, Hingham.
Tolman, Benjamin, Concord.
Tolman, Miss Harriet S., Boston.
Toppan, Roland W., Malden.
Torrey, Everett, Charlestown.
Tower, Miss Ellen May, Lexington.
Tower, Mrs. Helen M., Cambridge.
Tower, Sylvester, Boston.
Travis, Charles B., Brighton.
Trepess, Samuel J., Glencove, L. I., N. Y.
Tucker, Lawrence, Boston.
† Turner, John M., Dorchester.

Underwood, Loring, Belmont.

Vander-Woerd, Charles, Waltham.
Vaughan, William Warren, Boston.
Vinal, Miss Mary L., Somerville.

Wakefield, E. H., Cambridge.
Walcott, Henry P., M.D., Cambridge.
Waldo, C. Sidney, Jamaica Plain.
Wales, George O., Braintree.
Walker, Miss Mary Sophia, Waltham.
Walley, Mrs. W. P., Boston.
Walsh, Michael H., Wood's Holl.
Waltham, George C., Dorchester.
Walton, Daniel G., Wakefield.
Ward, Francis Jackson, Roxbury.
Ward, John, Newton Centre.
Ware, Benjamin P., Clifton

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Ware, Miss Mary L., Boston.
Warren, Samuel D., Dedham.
Washburn, Andrew, Hyde Hark.
Watson, Benjamin M., Jamaica Plain.
Watson, Thomas A., East Braintree.
Watts, Isaac, Waverly.
Webber, Aaron D., Boston.
Webster, Hollis. Cambridge.
Welch, David, Dorchester.
Weld, Christopher Minot, Jamaica Plain.
Weld, George W., Boston.
Weld, Richard H., Boston.
Weld, Gen. Stephen M., Dedham.
West, Mrs. Maria L.. Neponset.
Weston, Seth, Chelsea.
Wheeler, Frank, Concord.
Wheeler, James, Brookline.
Wheeler, Wilfred, Concord.
Wheelwright, A. C., Brookline.
Wheelwright, Edmund M., Boston.
Whitcomb, William B., Medford.
White, Mrs. Charles T., Boston.
White, Francis A , Brookline.
White, George R., Boston.
White, Joseph H., Brookline.
Whitney, Arthur E., Winchester.
Whitney, Ellerton P., Milton.
Whitney, Henry M., Cohasset.
Whittier, George E., Groton.
Whittier, William Benjamin, South Framingham.
Wigglesworth, George, Milton.
Wilbur, George B , West Newton.
Wilder, Edward Baker, Dorchester.
Wilder, Henry A., Malden.
Willard, E. W., Newport, R. I.
Willcutt, Levi L., Brookline.
Williams, Miss Adelia Coffin, Roxbury.
Williams, Benjamin B., Boston.
Williams, Henry Bigelow, Boston.
Williams, John Davis, Boston.
Williams, Philander, Taunton.
Willis, George W., Chelsea.
Willis, Joshua C., Roxbury.
Wilson, Col. Henry W., Boston.
Wilson, William Power, Boston.
Winthrop, Robert C., Jr., Boston.
Wood, William K., West Newton.
Woods, Henry, Boston.
Wright, George C., West Acton.
Wright, John G., Brookline.
Wyman, Oliver B., Shrewsbury.
Wyman, Windsor H., North Abington.

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ANNUAL MEMBERS.

Members of the Society and all other persons who may know of deaths, changes of residence, or other circumstances showing that the following list is inaccurate in any particular, will confer a favor by promptly communicating to the Secretary the needed corrections.

Allen, Charles L., Floral Park, N.Y.
Alles, William H., Chestnut Hill.
Anderson, George M., Milton.
Arnold, Miss Sarah L., Newton Centre.
Atkinson, Edward, Brookline.
Ayres, Miss Helen F., Medford.

Barker, John G., Melrose.
Barr, John, Wellesley.
Bigelow, Arthur J., Eastlake, Worcester.
Bigelow, Mrs. Nancy J., Southborough.
Bird, John L., Dorchester.
Blomberg, Carl, North Easton.
Bock, William A., North Cambridge.
Bolles, William P., M.D., Roxbury.
Boyden, Clarence F., Taunton.
Bradley, Miss Abby A., Hingham.
Braman, George H., Newton.
Breck, Charles H., Newton.
Brunton, Frank, Stockbridge.
Butler, Edward, Wellesley.

Carpenter, Frank O., West Roxbury.
Carter, Mrs. Sarah D. J., Wilmington.
Cary, Miss Alice B., Lexington.
Chase, Joseph S., Malden.
Chase, Philip A., Lynn.
Chubbuck, Isaac Y., Roxbury.
Clapp, Henry L., Roxbury.
Clark, John W., North Hadley.
Clark, Joseph, Manchester.
Clark, Theodore M., Newtonville.
Clinkaberry, Henry T., Trenton, N. J.
Collins, Frank S., Malden.
Comley, James, Lexington.
Coolidge, Dr. Sumner, East Watertown.
Cotter, Lawrence, Dorchester.
Cotting, Charles U., Boston.
Crosby, J. Allen, Jamaica Plain.
Curtis, Joseph H., Boston.
Curtis, Louville, Tyngsborough.

Davis, Frederick S., West Roxbury.
Dawson, Charles Jackson, Newark, N. J.
Derby, William H., Revere.
Dolbear, Mrs. Alice J., College Hill.
Dorr, George B., Boston.
Doyle, William E., East Cambridge.
Duffley, Daniel, Brookline.

Eastman, Edmund C., Brookline.
Eaton, Warren E., Reading.
Endicott, Miss Charlotte M , Canton.
Eustis, William Tracy, Brookline.
Ewell, Marshall F., Marshfield Hills.

Fenno, Warren, Revere.
Fisher, Sewell, Framingham.
Fiske, Harry E., Wollaston.

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Fitzgerald, Desmond, Brookline.
Fletcher, Fred W., Auburndale.
Forbes, William H., Jamaica Plain.
Francis, George E., M.D., Worcester.
Fuller, T. Otis, Needham.

Gill, Mrs. E. M., Medford.
Gilman, Hon. Virgil C., Nashua, N. H.
Grant, Charles E., Concord.
Grew, Henry Sturgis, Boston.
Grey, Robert Melrose, North Easton.
Grey, Thomas J., Chelsea.

Hall, Charles H., M.D., Corning, Cal.
Hall, Stacy, Boston.
Hallstram, Charles W., Boston.
Ham, Fernald E., Burlington.
Hargraves, William J., Jamaica Plain.
Harris, Frederick L., Wellesley.
Harrison, C. S., York, Nebraska.
Harrison, Thomas, Melrose Highlands.
Hartwell, Samuel, Lincoln.
Hatfield, T. D., Wellesley.
Hersey, Edmund, Hingham.
Heustis, Warren H., Belmont.
Hill, J. Willard, Belmont.
Hinds, Warren D., Townsend.
Hobbs, George M., Boston.
Hollis, George, South Weymouth.
Houghton, George S., West Newton.
Howden, Thomas, Whitinsville.
Hubbard, F. Tracey, Cambridge.
Huston, Miss Katharine W., Jamaica Plain.

Illenberger, Henry, Brookline.
Ireland, Robert D., Winthrop.

James, Robert Kent, Dorchester.
Jameson, G. W., East Lexington.

Keith, Mrs. Mary R., Washington, D. C.
Kelsey, Harlan P., Boston.
Kemp, William S., Brookline.
Kennard, Frederic H., Brookline.

Lancaster, Mrs. E. M., Roxbury.
Laurie, Robert, Newport, R. I.
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Lincoln, Miss Agnes W., Medford.
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Loring, Charles G., Boston.
Loring, Mrs. Thacher, Brookline.
Loring, William C., Beverly.
Lothrop, Thornton K., Boston.
Low, Hon. Aaron, Hingham.

Manda, W. A., South Orange, N. J.
Manning, A. Chandler, Reading.
Martin, William J, Milton.
Maynard, Charles, North Easton.
McLaren, Anthony, Westwood.
Meriam, Horatio C., D.M.D., Salem.
Metcalf, Dr. Ben H., Winthrop.
Milman, William, Roxbury.
Moody, Abner J., Boston.
Morgan, George M., Boston.
Morrison, William, Cohasset.
Moseley, Frederick C., Dorchester.
Moseley, Frederick Strong, Newburyport.
Munson, Prof. W. M., Orono, Me.

Newton, John F., Roxbury.
Nicholson, William, Framingham.
Norton, Michael H., Boston.
Norton, Patrick, Dorchester.

Olmsted, Frederick Law, Brookline.

Park, William D., Boston.
Parker, John, Newtonville.
Parker, Walter S., Reading.
Patterson, William, Quincy.
Peirce, George H., Concord Junction.

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Petremant, Robert, Brooklyn, N. Y.
Pettigrew, John A., Jamaica Plain.
Pickman, Dudley L., Boston.
Pierce, Mrs. F. A., Brookline.
Plimpton, Willard P., West Newton.
Pray, James Sturgis, Cambridge.
Purdie, George A., Ormond, Florida.

Rea, Charles H., Norwood.
Rea, Frederic J., Norwood.
Rich, Miss Ruth G., Dorchester.
Rich, William E. C., Roxbury.
Rich, William P., Chelsea.
Richards, Mrs. P. D., West Medford.
Robb, Peter B., Whitinsville.
Robbins, Oliver R., Weston.
Robinson, Walter A., Arlington.
Rodman, Miss Mary, Concord.
Ross, Charles W., Newtonville.
Ross, Henry Wilson, Newtonville.

Sander, Charles, Brookline.
Saunders, Miss Mary T., Salem.
Scott, Augustus E., Lexington.
Scudder, Samuel H., Cambridge.
Searles, E. F., Methuen.
Seaver, Edwin P., Waban.
Sharples, Stephen P., Cambridge.
Shaw, Hon. Edward P., Newburyport.
Shea, James B., Jamaica Plain.
Shepard Harvey N., Boston.
Sheppard, Edwin, Lowell.
Southworth, Edward, Quincy.
Squire, Miss Esther A., North Cambridge.
Stevens, Mrs. Mary L., Cambridge.
Stone, Joshua C., Watertown.
Story, Miss Sarah W., Brighton.
Strange, David T., Stoneham.
Sullivan, Michael, Revere.
Sutherland, George A., Roslindale.
Swan, Charles W., M.D., Brookline.

Tailby, Joseph, Wellesley.
Teele, William H., West Acton.
Tobey, Rufus T., Roxbury.
Tyler, Mrs. John F., North Andover.
Tyndale, Theodore H., Brookline.

Vaughan, J. C., Chicago, Ill.

Warren, Samuel H., Weston.
Welch, Patrick, Dorchester.
Westwood, Thomas H., Jamaica Plain.
Wheeler, Henry A., Newtonville.
White, Maurice P., Roxbury.
White, W. Henry, Lowell.
Whitney, Joseph, Cambridgeport.
Whiton, Hon. Starkes, Hingham Centre.
Wilder, Miss Grace S., Dorchester.
Wilder, Miss Jemima R., Dorchester.
Wilkie, Edward A., Newtonville.
Winter, William C., Mansfield.
Wolcott, Mrs. H. L. T., Dedham.
Wood, Mrs. Anna D , West Newton.
Wood, Elijah A., West Newton.
Wood, E. W., West Newton.
Woodford, Joseph H., Boston.
Woods, Henry F., Boston.

Young, E. Bentley, Boston.

Zirngiebel, Denys, Needham.

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EXTRACTS FROM THE CONSTITUTION AND BY-LAWS.

SECTION XXII.

Life Members.

The payment of thirty dollars shall constitute a Life Membership, and exempt the member from all future assessments, and any Annual Member, having paid all dues, may become a Life Member by the payment of twenty dollars in addition thereto.

Annual Membership.

Every Annual Member, before he receives his diploma, or exercises the privileges of a member, shall pay the sum of ten dollars as an admission fee, and shall be subject afterwards to an annual assessment of two dollars.

SECTION XXIII.

Withdrawal or Discontinuance of Membership.

Any member may withdraw from the Society, on giving notice to the Treasurer and paying the amount due from him. Any member who shall neglect for the space of two years to pay his annual assessment, after due notice from the Treasurer, shall cease to be a member. The Treasurer shall give notice of such withdrawals, or discontinuances to the Secretary, who shall erase such members' names from the list.

The attention of Annual Members is particularly called to Section XXIII.

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HONORARY MEMBERS.

Members and correspondents of the Society and all other persons who may know of deaths, changes of residence, or other circumstances showing that the following list is inaccurate in any particular, will confer a favor by promptly communicating to the Secretary the needed corrections.

Information, or any clew to it, is especially desired in regard to Joseph Maxwell, *elected in* 1830, *and* George W. Smith, *elected in* 1851.

Hon. George S. Boutwell, Groton.

Clarence H. Clark. Ex-President of the Pennsylvania Horticultural Society, Philadelphia.

Joseph Jefferson, Buzzard's Bay.

Major L. A. Huguet-Latour, M. P., Montreal, Canada.

Sir Trevor Lawrence, President of the Royal Horticultural Society, London.

Joseph Maxwell, Rio Janeiro, Brazil.

Donald G. Mitchell, New Haven, Conn.

Hon. J. Sterling Morton, Ex-Secretary of Agriculture, Nebraska City, Neb.

Baron R. Von Osten Sacken, Heidelberg, Germany.

Samuel B. Parsons, Flushing, N. Y.

Dr. Henry S. Pritchett, President of the Massachusetts Institute of Technology, Boston.

George W. Smith, Boston.

Albert Viger, President of the National Society of Horticulture of France, Paris.

Hon. James Wilson, Secretary of Agriculture, Washington, D. C.

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CORRESPONDING MEMBERS.

Members and correspondents of the Society and all other persons who may know of deaths, changes of residence, or other circumstances showing that the following list is inaccurate in any particular, will confer a favor by promptly reporting to the Secretary the needed corrections.

Information, or any clew to it, is especially desired in regard to Alexander Burton, *elected in* 1829; S. Reynolds, M.D., 1832; *and* Francis Summerest (or Summerer), 1833.

Édouard André, Editor-in-chief of the Revue Horticole, Paris, France.

George Francis Atkinson, Professor of Botany in Cornell University, Ithaca, N. Y.

Professor L. H. Bailey, Horticultural Department, Cornell University, Ithaca, N. Y.

John Gilbert Baker, F. R. S., F. L. S., Kew, England.

Charles Baltet, Président de la Société Horticole, Vigneronne, et Forestière de l' Aube, Troyes, France.

Peter Barr, London, England.

Archibald F. Barron, Turnham Green, London, W.

Napoleon Baumann, Bolwiller, Alsace.

D. W. Beadle, 303 Crawford St., Toronto, Ontario.

Professor William J. Beal, Agricultural College, Michigan.

Prosper J. Berckmans, Ex-President of the American Pomological Society, Augusta, Ga.

Charles E. Bessey, Ph. D., Professor of Botany in the Industrial College of the University of Nebraska, Lincoln.

Dr. Ch. Bolle, Berlin, Prussia.

Col. Gustavus B. Brackett, Pomologist to the United States Department of Agriculture, Washington, D. C.

John Croumbie Brown, LL.D., Haddington, Scotland.

Professor J. L. Budd, Ames, Iowa.

William Bull, Chelsea, England.

F. W. Burbidge, M.A., Trinity College Botanic Garden, Dublin, Ireland.

Alexander Burton, United States Consul at Cadiz, Spain, Philadelphia

Daniel T. Curtis, Dorchester.

Rev. H. Honywood D'Ombrain, Westwell Vicarage, Ashford, Kent, England.

Sir W. T. Thiselton Dyer, K. C. M. G., F. R. S., Director of the Royal Botanic Gardens, Kew, England.

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PARKER EARLE, President of the American Horticultural Society, Roswell, N. M.

GEORGE ELLWANGER, Rochester, N. Y.

HENRY JOHN ELWES, F. L. S., F. Z. S., Colesborn, Andoversford, Gloucestershire, England.

WILLIAM G. FARLOW, M.D., Professor of Cryptogamic Botany, Harvard University.

B. E. FERNOW, Forestry School, Cornell University, Ithaca, N. Y.

HON. ROBERT W. FURNAS, Ex-President of the Nebraska State Horticultural Society, Brownville.

BEVERLY T. GALLOWAY, Horticulturist and Superintendent of Gardens and Grounds of the United States Department of Agriculture, Washington, D.C.

CHARLES A. GOESSMANN, Ph.D., LL.D., Chemist of the Hatch Experiment Station of the Massachusetts Agricultural College, Amherst.

GEORGE L. GOODALE, M.D., Professor of Botany, Harvard University, Cambridge.

HENRY H. GOODELL, President of the Massachusetts Agricultural College, Amherst.

OBADIAH B. HADWEN, President of the Worcester County Horticultural Society, Worcester.

PROFESSOR BYRON D. HALSTED, Botanist and Horticulturist at the New Jersey Agricultural Experiment Station, New Brunswick, N. J.

PROFESSOR CARL HANSEN, of the Royal College of Agriculture, Copenhagen, Denmark.

J. H. HART, Superintendent of the Botanic Garden, Trinidad.

DR. F. M. HEXAMER, Editor of the American Agriculturist, New York.

J. W. HOFFMANN, Colored State University, Orangeburg, S. C.

J. C. HOLDING, Ex-Treasurer and Secretary of the Cape of Good Hope Agricultural Society, Cape Town, Africa.

THE VERY REV. S. REYNOLDS HOLE, D.D., Dean of Rochester, Rochester, England.

SIR JOSEPH HOOKER, K.C.S.I., The Camp, Sunningdale, England.

JOSIAH HOOPES, West Chester, Pa.

GEORGE HUSMANN, Napa, Cal.

CHARLES JOLY, Honorary Vice-President of the Société Nationale d'Horticulture de France, Paris.

SIR GEORGE KING, K. C. I. E., M. B., LL. D., F. R. S., Calcutta.

PROFESSOR WILLIAM R. LAZENBY, Department of Horticulture and Forestry; Secretary College of Agriculture and Domestic Science, Ohio State University, Columbus, O.

MAX LEICHTLIN, Baden-Baden, Germany.

VICTOR LEMOINE, Nancy, France.

DR. PETER MACOWAN, Director of the Botanic Garden, Cape Town, Africa.

DR. MAXWELL T. MASTERS, Editor of the Gardeners' Chronicle, London.

GEORGE MAW, Benthal, Kinley, Surrey, England.

T. C. MAXWELL, Geneva, N. Y.

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F. W. Moore, A. L. S., Curator of the Royal Botanic Gardens, Glasnevin, Dublin, Ireland.

Dr. Daniel Morris, C.M.G., D.Sc., M.A., F.L.S , Imperial Department of Agriculture, Barbados.

George Nicholson, Kew, England.

Peter Nøvik, Secretary of the Norwegian Horticultural Society, Christiania.

William Paul, Waltham Cross, London, N.

Professor D. P. Penhallow, Director of the Botanic Garden, Montreal, Canada.

Henry Probasco, Cincinnati, Ohio.

P. T. Quinn, Newark, N. J.

Cavalière Enrico Ragusa, Palermo, Sicily.

D. Redmond, St. Nicholas, Florida.

S. Reynolds, M.D., Schenectady, N. Y.

Benjamin Lincoln Robinson, Ph.D., Curator of the Gray Herbarium of Harvard University, Cambridge.

William Robinson, Editor of Gardening Illustrated, London.

William Salway, Superintendent of Spring Grove Cemetery, Cincinnati, O.

Edgar Sanders, Chicago, Ill.

William R. Smith, Superintendent of the Botanic Garden, Washington, D. C.

Robert W. Starr, Port William, N. S.

Dr. Joseph Stayman, Leavenworth, Kan.

Francis Summerest.

William Trelease, Director of the Missouri Botanic Garden, St. Louis.

Dr. Melchior Treub, Director of the Botanic Garden, Buitenzorg, Java.

H. J. Veitch, Chelsea, England.

William Watson, Curator of Royal Gardens, Kew, England.

Professor L. Wittmack, Secretary of the Royal Prussian Horticultural Society, Berlin, Prussia.

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EXPERIMENT STATION REPORTS WANTED.

The Massachusetts Horticultural Society is endeavoring to collect complete sets of the Bulletins and other publications of all the Agricultural Experiment Stations in the United States and Canada. Those named below are wanting, and any person having a spare copy will confer a favor by addressing the Librarian of the Society, Horticultural Hall, No. 300 Massachusetts Ave., Boston.

Alabama (Ag. and Mech. College Station).— Bulletins 4–6 (1884), 7–10 and 1–4 (1885), and 5–9 (1886). 7th Annual Report, for 1894, and 9th, for 1896.

Alabama (Canebrake Station).— All Bulletins later than 18, and all Annual Reports later than the 3d, for 1890.

Alabama (Tuskegee Station).—Bulletin 2.

Arizona. — 4th Annual Report, for 1893.

Arkansas.— Bulletin 1. All Annual Reports later than the 4th, for 1891, except the 8th, for 1895.

California.— Bulletins 32, 1878, and 1, 2, 3, 5, and 50, New Series.

Colorado.— Bulletin 3.

Connecticut (New Haven Station).—Bulletins 1 to 67, inclusive. Annual Reports for 1877 and 1879 to 1883, inclusive.

Florida.— Annual Report for 1892.

Indiana.— (Purdue Univ. School of Ag.).—Bulletin 1. College Reports 1 to 14, inclusive.

Iowa.—Bulletins 54, 55 and 56. (The original bulletins.)

Kentucky.— Bulletin 10.

Michigan.— Special Bulletins 1, 3, and 5. 6th Annual Report, for 1892–93 (contained in Report of Michigan Board of Agriculture, 1893).

Missouri. — Bulletins 9, 13, 15, 16, 19, 20, 25, and 26 of Old Series. All Annual Reports since the 1st, for 1888, except those for 1896 to 1898, inclusive.

New Jersey.— Bulletins 1, 4, 5, 15, 27, and 28.

New Mexico.— Eighth College Catalogue, 1897–98.

New York (Cornell). — 1st Annual Report, 1881–82, and all between that and 1888, except the 2nd, for 1882–83. (Reports of Agricultural Department of Cornell University.)

North Carolina. — Bulletins 1 to 56, inclusive, and 69, 2d ed. 1st to 7th Biennial Reports. Meteorological Division, Bulletin 2 (68*b*). Special Bulletins 1 (77*a*) and 4 (82*a*). Weekly Weather Crop Bulletins 1–21, 1888; 1–24, 1889; 1–25, 1890; 2 and 4, 1891.

North Dakota.— 4th Annual Report, for 1893.

Ohio.— All Bulletins of First Series, except 16, 17, 18, and 19.

Oklahoma. — All Annual Reports previous to that for 1896–97, except that for 1893–94.

Pennsylvania. — Annual Reports for 1869, 1872, 1879–80, 1881, 1882, 1883, and 1884. [All issued by the State College.] Bulletin of Information No. 1.

South Carolina.— All Bulletins of the Old Series (previous to 1888) on the work of the Experimental Farm of the South Carolina College. 3d Annual Report, for 1890, and 6th, for 1893.

Texas.—College Bulletins 1–5, 1883–1887.

Virginia. — 10th Annual Report, for 1898-99.

Washington. — Bulletins 28 and 29. 6th, 7th, and 8th Annual Reports, for 1895–96, 1896–97, and 1897–98.

West Virginia.— Special Bulletin — Potash and Paying Crops, 1890.

Wyoming.—Bulletins 2 to 4, 9, and 10.

Ontario Department of Agriculture, Toronto.—Bureau of Industries. — Agricultural Returns to the Ontario Bureau of Industries, Nov. 1882 (5th), Aug. 1883 (7th), and Nov. 1887 (20th).

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TRANSACTIONS

OF THE

Massachusetts Horticultural Society

FOR THE YEAR 1902.

PART I.

BOSTON:
PRINTED FOR THE SOCIETY,
1902.

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The following lectures have been circulated to some extent in the form of slips reprinted from the reports made by the Secretary of the Society in the "Boston Evening Transcript." As here presented, the lectures are, as far as possible, printed in full, and reports of the discussions following the lectures are added, these, where it appeared necessary, having been carefully revised by the speakers.

The Committee on Lectures and Publication take this opportunity to repeat what they have before stated, that the Society is not to be held responsible for the certainty of the statements, the correctness of the opinions, or the accuracy of the nomenclature, in the lectures and discussions now or heretofore published, all of which must rest on the credit or judgment of the respective writers or speakers, the Society undertaking only to present these papers and discussions, or the substance of them, correctly.

AARON LOW,
J. H. BOWDITCH,
E. W. WOOD,
Committee on Lectures and Publication.

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TRANSACTIONS

OF THE

Massachusetts Horticultural Society.

BUSINESS MEETING.

SATURDAY, January 4, 1902.

A duly notified stated meeting of the Society was holden today at eleven o'clock, the President, O. B. HADWEN, in the chair.

This being the commencement of the term of office of the new board of Officers and Standing Committees, the President delivered his annual address as follows:

Ladies and Gentlemen,

Members of the Massachusetts Horticultural Society:

It is assigned to me by your very complimentary vote at the annual meeting, and by usual custom at the first meeting of the new year, to open with a few remarks. To me it is a pleasure to perform any duty that may tend to enable the members of the Society to act in greater unity and concert, that the present and past usefulness and future welfare of the Society may continue, in its legitimate purpose, to carry forward and adhere to the original Act of Incorporation for the "purpose of encouraging and improving the science and practice of horticulture and promoting the amelioration of the various species of trees, plants, fruits, and vegetables." The Society with its long life and energies has

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moved this great Commonwealth with the spirit of enterprise that we now enjoy in horticultural pursuits, and, by the addition of the great productive industry so well established, and yearly increasing, which affords sustenance and good homes to a vast number of people within this Commonwealth.

The first Saturday in January is the time fixed by the By-Laws when the newly elected officers enter upon their official duties, when the Treasurer's report of the receipts and expenditures of the Society and the Schedule of Prizes for the ensuing year are in order to be acted upon.

We are assembled here today in this new and substantial edifice, it being the third building erected by the Society for its exhibition halls and library. The Society, with its seventy-two years of active life, eminent in its calling, now approaches the most important epoch in its history. The ensuing year will demonstrate, may we hope, the success of the removal from the business portion to the residential section of the city, a change that requires very considerable adaptability and a persistent purpose to carry forward with the utmost energy the objects of the Society so fundamental to its life and prosperity. Our main object should be a strong unanimity, not only to adapt ourselves to our situation, but a determination to overcome all prejudice that may exist, and work with a will to reinstate the good old prosperous years we enjoyed in the spot that many left with feelings of deep regret. The year just closed has, therefore, been to many members one of considerable anxiety.

The completion of this building so late in the year made necessary the postponement of the summer exhibitions, but the first flower show held in this building on June 3d to 9th proved a marvel of beauty and a success, and the halls proved their complete adaptation for the exhibition of plants of very large size that no other hall could possibly accommodate; it also proved undoubtedly the most elaborate of its kind ever brought together in this country.

The second exhibition held in this building, on November 7th to 10th, when prizes were awarded for fruits, flowers and vegetables, proved a marked success; it brought out in the greatest profusion, the richest treasures of the greenhouses, gardens and orchards, and all the available room seemed to be occupied, and

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the arrangement was wonderfully pleasing in every feature; it was a well deserved credit to the committee having it in charge.

Both of these exhibitions were generously patronized and appreciated by the public, and left a substantial sum above expenses incurred. These displays also demonstrated that the public will sustain large exhibitions of the Society and will also encourage and patronize the Sunday exhibitions. Is there anything more worthy than the rich treasures of the fields and gardens?

The Committee on School Gardens and Children's Herbariums in December held an exhibition in the Lecture Hall, which proved one of the best ever held under the auspices of this Society and well deserved the encouragement it received. Here much intelligence and taste was abundantly manifest in the preservation of flowers and plants, both wild and cultivated, which were perfectly arranged.

In conclusion, for I must be brief in view of the business of the meeting, permit me to remind you of your duties for the ensuing year and to urge you to use your best efforts to sustain the Society. Your Committees will recommend no reduction in the amount of premiums. We are surrounded with new conditions that none can accurately foresee; the year will be one of experiment and experience, and let us resolve that no effort shall be spared to render the exhibitions and the general prosperity of the Society superior to those of the years that have preceded us.

Ladies and Gentlemen, tendering you my thanks, in behalf of the Society, I offer the congratulations of the season.

The Executive Committee reported a recommendation that the Society make the following appropriations for the year 1902:

For Prizes and Gratuities for the year 1902,

For Plants	$2,000.00
For Flowers	2,500.00
For Fruits	1,700.00
For Vegetables	1,200.00
For Gardens	500.00
For Native Plants	175.00
Total	$8,075.00

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For the Committee on School Gardens and Children's Herbariums, for Prizes	$125.00
For the same Committee for Incidental Expenses .	75.00
For the Library Committee, this sum to include the income of the French and Farlow Funds . .	700.00
For the Committee of Arrangements, this sum to include all extraordinary expenses of said Committee	300.00
For the Committee on Forestry and Roadside Improvement	150.00
For the Committee on Lectures and Publication, this sum to include the income of $50 from the John Lewis Russell Fund	250.00
For the Salaries of the Treasurer and Superintendent of the Building, and the Secretary and Librarian .	3,000.00

These appropriations are the same as for last year, and they were unanimously voted.

The Executive Committee also reported the appointment of Charles E. Richardson as Treasurer and Superintendent of the Building, and Robert Manning as Secretary and Librarian for the year 1902.

The Report of the Committee on Forestry and Roadside Improvement, and the Report of the Committee on Native Plants were read by the Secretary and severally referred to the Committee on Lectures and Publication.

(AA. *See statement, page 10.*)

The Annual Report of the Committee on Lectures and Publication was read by Hon. Aaron Low, Chairman.

On motion of Francis H. Appleton it was

Voted, That the reading of the reports of Committees be dispensed with, and that said reports be referred to the Committee on Lectures and Publication.

Patrick Norton presented his report as Chairman of the Committee on Gardens.

Joseph H. Woodford presented his report as Chairman of the Committee of Arrangements.

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Henry L. Clapp presented his report as Chairman of the Committee on School Gardens and Children's Herbariums.

These reports were severally accepted and referred to the Committee on Lectures and Publication.

A motion that the report of the Building Committee, giving a detailed statement of the cost of the new building, be read, was defeated.

On motion of George D. Moore, it was

Voted, That an itemized statement of the cost of the new building be prepared by the Building Committee and sent to every member of the Society.

A printed copy of a proposed new Constitution and By-Laws was offered and read by Richard M. Saltonstall. After a second reading by Francis H. Appleton, and after it had been voted to change the word "shall" to "may" in the sixth line of Section XIII, and the words "a majority" to "two-thirds" in the next to the last line of Section XVI, the proposed Constitution and By-Laws were approved by a majority vote and ordered to be entered upon the records for consideration at the Stated Meeting on the first Saturday in April.

Vice-President Benjamin P. Ware was now called to the chair and it was, upon motion of J. Woodward Manning,

Voted, That the President of the Massachusetts Horticultural Society be a Committee of one to serve on the General Reception Committee for the Sixth Annual Meeting of the American Park and Outdoor Art Association, to be held in Boston, in August, 1902.

Voted, That $100 (one hundred dollars) be appropriated by the Massachusetts Horticultural Society toward a fund to be placed at the disposal of the General Reception Committee of the American Park and Outdoor Art Association.

In regard to the disposal of the statues of Ceres, Flora and Pomona, which had adorned the old Horticultural Hall, on Tremont Street, it was

Voted, That a committee be appointed to confer with the donors of the statues and the City of Boston in reference to their disposal by the Society. President O. B. Hadwen, William C. Strong and William H. Spooner were appointed as that Committee.

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The following named persons, having been recommended by the Executive Committee for membership in the Society, were on ballot duly elected:—

FRANCIS R. BANGS, of Boston.
GEORGE E. CABOT, of Boston.
ARTHUR DEHON HILL, of Boston.
EDMUND REARDON, of Cambridgeport.

The meeting was then dissolved.

STATEMENT.

The records of the Stated Meeting, held Saturday, January 4, 1902, were not completed by Mr. Robert Manning, late Secretary of the Society, before his death, which occurred February 17th. From the line in such records marked AA they were prepared by Mr. Nathaniel T. Kidder, who was appointed Secretary *pro tem* March 1st, from memoranda left by Mr. Manning, from written copies of motions found among his papers, and from personal recollection.

MASSACHUSETTS HORTICULTURAL SOCIETY.

At a meeting of the Society on Saturday, November 2, 1901, it was voted that the Building Committee be requested to furnish a detailed statement of the cost of the new building. The following statement was received in reply to this request and at a meeting held January 4, 1902, it was voted that a copy be sent to every member of the Society.

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STATEMENT OF COST OF NEW MASSACHUSETTS HORTICULTURAL SOCIETY BUILDING.

C. A. Dodge & Co.,	General Contract,	$238,219 62
John Evans & Co.,	Carving,	5,976 00
W. A. Snow & Co.,	Musician's balcony,	227 00
G. M. Angier,	Electric wiring,	2,721 22
A. A. Sanborn,	Heating and ventilating,	14,257 50
C. E. Horn,	Elevator,	445 00
Pierce & Cox,	Plumbing,	4,051 41
Murdock Parlor Grate Co.,	Bronze letters,	275 00
Vermont Marble Co.,	Marble for library,	65 00
L. M. Ham & Co.,	Sidewalk lights, etc., alley,	286 00
T. F. McGann,	Exterior iron balconies,	985 00
Bowker, Torrey & Co.,	Marble,	116 85
R. D. Ireland & Co.,	Electric light fixtures,	1,676 03
Elektron Manufacturing Co.,	Dumb waiter,	950 00
Walworth Manufacturing Co.,	Pipe,	5 79
Kearns & Co.,	Monolith floor, kitchen,	150 00
Duparquet, Huot and Moneuse Co.,	Kitchen furnishings,	555 50
R. Guastavino,	Arch over ticket office, etc.,	188 09
Enoch Robinson,	Brass rails, ticket office,	89 97
Taylor, Carr & Andrews,	Granolithic work, alley,	440 00
O. P. Hastings,	Shades,	115 47
Boston Electric Light Co.,	Service,	136 57
Metropolitan Coal Co.,	Coal,	699 84
John F. Berrigan,	Two tide valves,	201 49
Incandescent Electric Light Ma. Co.,	Manipulator for electric lights,	24 34
Thomas Parker & Co.,	Use of Salamanders,	67 75
B. F. Smith & Brother,	Testing for foundations,	302 75
Rockwell & Churchill,	Printing specifications,	49 50
Aspinwall & Lincoln,	Surveying,	35 00
W. L. Kimball,	Salary as Supt. of Construction,	2,020 50
Traveling Expenses,		437 74
Extra Blueprints for estimating,		79 49
Fireman's salary,		589 32
French & Hubbard,	Heating and elec. engineers,	904 40
Incidentals,		5 90
Wheelwright & Haven,	Architects,	13,646 32
		$290,997 36

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MEETING FOR LECTURE AND DISCUSSION.

SATURDAY, January 11, 1902.

A meeting for Lecture and Discussion was holden * today at eleven o'clock, the President, O. B. HADWEN, in the chair.

The following lecture was delivered:

THE BROWN-TAIL MOTH IN MASSACHUSETTS.

BY A. H. KIRKLAND, M. S., Boston.

Some of the most difficult problems in the economic entomology of the present day result from the importation of foreign insect pests. The San José scale, elm leaf beetle and gypsy moth are illustrations only too familiar. Such pests usually arrive unattended by the parasites or other natural enemies which control their increase in their native region, and in a new environment cause severe and widespread injury. The advantages offered by Massachusetts as a place of residence must be well understood by the insect fauna of other lands, for this Commonwealth certainly has received her a full quota of foreign insect visitors. To the ever lengthening list there has been added recently the brown-tail moth, a pest of the first magnitude at home. Apparently it is determined to maintain its reputation here if we are to judge by its serious depredations last summer in the Metropolitan district.

It is indeed a strange fatality that another European insect, closely related to the gypsy moth by habit and structure, should become accidentally imported into the same locality to which thirty years before a misguided scientist brought the gypsy moth. It would seem that the world is large enough to give each of these pests a separate "sphere of influence." That they were both transported across the Atlantic to the same locality by totally dissimilar agencies must stand as one of the remarkable entomological events of the century just closed. However, the pest is with us and in tremendous numbers. In five years' time it has spread from Somerville to Scituate, Brockton, Hudson and even to Kittery, Me. Knowing the habits of the moth it is fair to assume

* At Chickering Hall.

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that a large part of the region lying between these points and the sea is generally infested.

The parent brown-tail moth is a beautiful, snow-white moth with a conspicuous brown tail, hence the common name. The moths expand some one and one-half inches and are on the wing throughout the month of July. They are sluggish and inactive by night and are strongly attracted by lights. That good old scientist Réaumur writes, "I have never seen the moth use them (the wings) in flight nor even try to do so," a statement which testifies to the good hours kept by this early student of insects if not to the unfailing accuracy of his observations. The eggs are neatly packed in a yellow hair-covered mass on the under surface of the leaves of pear and other food plants and hatch in about three weeks. The height of the flying and laying season falls around the 15th of July and by the first week in September the majority of the eggs have hatched.

The young larvæ feed at first on the epidermis of the leaf to which the eggs were attached, then draw down other leaves eventually covering them with a tough, silken envelop. In this way with a few leaves as a basis, the compact, silken winter webs are formed and securely attached to the twigs. The larvæ sally out by day to feed, returning to the web at nightfall, and on the approach of cold weather close the openings of the webs and hibernate in the silken chambers inside. The writer once counted the inmates of eighteen of these webs taken at random and found they contained from forty-seven to six hundred and seventy-four larvæ, with an average of two hundred and seventy-seven. Seven female moths carefully dissected contained from one hundred and forty-five to three hundred and forty-four eggs each, with an average of two hundred and fifty-one. These figures are suggestive as bearing on the possible rate of increase of the moth.

Within these silken shelters the tiny caterpillars rest secure throughout the vicissitudes of our New England winters. Réaumur noticed that they were not affected by a temperature of 11° Fh., while they passed unharmed through what Köllar euphemistically calls "the frost on the 2nd of February, 1830," when the mercury fell to 60° below zero Fh.

The return of warm weather causing the buds to swell brings forth the caterpillars with appetites in proportion to the length of

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their fast. At this time these insects have a great advantage over some of our native fruit tree pests. Tent caterpillars or canker worms, for example, hatch in the spring and their growth, at least for a time, does not keep pace with the development of the foliage. The brown-tail moth larvæ, on the contrary, come forth partly grown and with the experience of weeks of foraging the previous fall. They consume buds, blossoms and leaves in turn, and where extra abundant will keep down every sign of leafage until the middle or last of June, when they spin up in masses on the sides of buildings, along fences and even in the foliage of trees. Within the cocoons the caterpillars soon change to pupæ from which in due season the moths emerge.

In Europe this insect is an old offender. It is found from southern Sweden to Algiers and from Portugal to the Himalayas, but it is from France and Germany that we obtain best accounts of its injury to orchards and forests. Thus in the early part of the sixteenth century Choirier relates that in the province of Dauphiny the caterpillars of this moth were so abundant that the attorney-general of the Province found it necessary to issue an injunction against them and ordered them to evacuate the fields. Again in 1543 a member of the city council of Grenoble introduced a resolve begging the local church official "to excommunicate these pests and censure them, in order to check the damage they were doing daily." The council promptly enacted the resolve.

Jean Goedart, writing in 1700, describes the "singular nature" and "remarkable knowledge and foresight" of the caterpillars. Réaumur, traveling from Tours to Paris in 1731, "found every oak in possession" of these insects.

In London and vicinity in 1782 damage by this insect was so severe as to terrorize the inhabitants; and in the language of Donovan "it was naturally interpreted as a visitation from Heaven ordained . . . . . to deprive men and cattle of their most essential food and leave them a prey to famine." Public prayers for relief were offered in the churches, while the municipal authorities, evidently believing that works go well with faith, gave a shilling per bushel for the caterpillar webs. At Clapham in a single day eighty bushels of webs were thus collected and burned.

In 1796 injury by this insect had become so great in France that a law was enacted by the French parliament compelling prop-

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erty owners to cut off and burn the webs, the penalty for neglect being from three to ten days' imprisonment.

In 1829 M. Wallner found the caterpillars of the brown-tail moth causing severe damage throughout Bohemia, Austria, Bavaria and Switzerland. Ratzeburg states that in the late fifties the brown-tail moth ravaged the oaks in the streets of Potsdam and even killed some of them.

Altum records a local outbreak at Eberswald in 1874 when fruit trees were stripped, while as late as 1897 an anonymous writer in Gartenflora says "the larvæ of the brown-tail moth have entirely stripped the oaks and many bushes in the Tiergarten" at Berlin.

These records taken at random from European entomological works, the majority of which are in the library of this Society and to which I have been allowed free access, give sufficient evidence of the insect's capacity for harm. Lacking most of its natural enemies it is possible that here it may prove even more injurious than in the Old World.

In May, 1897, several Somerville, Mass., property owners found an annoying caterpillar plague on their pear trees, and reported the same to the Gypsy Moth Committee. Upon the indentification of the insects by Prof. C. H. Fernald the writer endeavored to discover how they had been imported. He found the depredations of the moth to centre around a Somerville florist's establishment where for many years, previous to about 1890, large quantities of roses had been imported from Holland and France. We know that this insect is a common pest in those countries. From observation, as well as from the testimony of Donovan, Salisbury, Boisduval, Senoner and others, we know that this insect feeds and spins upon the rose. Therefore, there is the strongest kind of circumstantial evidence that the insect was accidentally brought to Somerville on imported rose bushes.

The 1897 outbreak of the brown-tail moth will be long remembered by many Somerville citizens. Although a local affair involving only a few acres, it occurred in a densely populated section and hence assumed much importance. Pear and other fruit trees were completely stripped while a few shade trees were much injured. In 1898 and 1899 the control of the moth was attempted by the Gypsy Moth Committee as a result of legislative action and in those years but little damage was done by the insect. After

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the state work against the moth had ceased in 1900, a large natural increase in numbers developed, and last year the ravages of the moth were notably severe throughout the Metropolitan district. Fruit trees were the chief sufferers, but shade trees were also quickly defoliated. In Allston and Brighton the damage was particularly severe, and as a result citizens of those districts petitioned the Boston Board of Health for a public hearing on the subject. The chief cause for this action was not, however, the caterpillars' injury to the trees, but rather the intense and truly terrible nettling which occurred whenever the insects came in contact with human flesh. This irritation in its worst form beggars description, as the writer can testify from personal experience. It has caused several cases of severe illness among children and aged people. So far as we have been able to determine, the irritation is a mechanical one, caused by the breaking up in the skin of the fine, brittle, barbed caterpillar hairs. It is not dependent upon the live insects because hairs from cocoons nettle as badly as those from living caterpillars, and after the cocoons are formed a person may become seriously affected by passing through a badly infested locality, the loose hairs apparently being blown about by the wind. European authorities do not discuss this matter to any great extent, apparently considering it as a well-known phenomenon. Köllar says that the caterpillars "should be taken hold of with great caution," while Fischer advises protecting the hands when engaged in the work of caterpillar destruction.

The present abundance of this insect throughout the Metropolitan district is a matter of grave importance. In Somerville, Cambridge, Arlington, Medford, Malden, Lynn and elsewhere there are enough hibernating brown-tail moths to cause widespread damage and affliction next summer. The noted pear orchards of Revere are thoroughly infested. There are so many webs in certain Belmont apple orchards that one might well believe that for some mysterious reason a part of the foliage did not fall last autumn, but remained dead upon the trees. There is hardly a pear tree within a five mile radius of Somerville but that is generally infested, while street elms, maples and willows all bear the webs of the hibernating insects. While the alarmist or pessimist may be unpopular, the writer holds that there are good grounds in this case for believing that we shall witness a most serious outbreak of

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this insect next summer unless far reaching remedial measures are adopted.

If this insect confined itself to one or two species of trees its damage would be reduced and its spread limited. While the elm beetle or the tent caterpillar will not thrive in an oak forest, the brown-tail moth readily adapts itself to a wide range of food plants. Aside from fruit trees, European authorities lay particular stress on its injuries to oaks and elms. With us the pear ranks as the chosen food plant, with the apple a close second. Plum, cherry, quince and rose are well relished, while the white oak, swamp white oak, elm, silver maple, rock maple and wild cherry are among the trees frequented by the moth. This list shows that the distribution of the moth in this country will not be checked by lack of suitable food.

Since the female moth flies freely, we should look for a gradual extension of the infested area, and the writer believes it will be a matter of only a few decades before this pernicious insect will be found throughout New England. Aside from the migration of the mature insects, the caterpillars often travel three hundred or more feet in search of food. In their earlier stages they drop on teams and are thus transported from place to place. The principal spreading, however, takes place in the moth state and it is apparent that these insects sometimes fly several miles. Being strongly attracted to light, they are most abundant in the centres of towns, localities where street lights are most abundant. Multitudes of the moths are destroyed by arc lights. The writer has taken nearly two quarts of these moths from the globe of an arc light, while underneath such lamps in early morning the ground is often white with their bodies. All night long under these lamps sit toads ready to snap up the fluttering insects that fall partly stunned from the lights above. Of the moths killed by four lamps at the height of the flying season in 1897, thirty-five per cent were females that had not deposited their eggs.

The moth also has enemies of its own order in the shape of parasitic insects which sting the larvæ and pupæ. One minute parasite, *Diglochis omnivorus* Walk., is especially beneficial and destroys large numbers of pupæ. This parasite is of European origin and probably is the most important natural enemy of the brown-tail moth in this country.

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Early in the spring predaceous bugs of the genus *Podisus* swarm to the caterpillar webs and destroy large numbers of the insects as they feed.

Wasps carry off a few of the small caterpillars, while the oriole and cuckoo devour them at times. We are obliged to credit the English sparrow with the destruction of large numbers of the mature moths. These birds search fences, house walls and trees in pursuit of the moths and feed eagerly upon them.

The combined efforts of these natural enemies as yet have not been sufficient to reduce the increase of the moth, and where the insect is abundant relief can be obtained only by the thorough application of preventive or remedial measures. Of these the destruction of the webs in the winter is the preventive *par excellence*. For five months of the year the caterpillars are assembled within their conspicuous webs at the tips of the twigs which may be cut off and burned with a minimum of effort and expense. So simple and effective is this preventive work that in France, as already pointed out, it is made obligatory on all owners or tenants of estates.

The implements needed are a ladder and a Waters' pruner or other long-handled pruning device. Thus equipped an active man can easily cut off and burn a large number of webs in a day. It is important that every web should be burned for the writer's investigations show that upward of ten per cent of the larvæ emerge from webs lying on the ground through the winter. In the winter of 1899–1900 the gypsy moth employees destroyed nearly one million of these webs on fruit and shade trees at an average cost of about one cent each. Where fruit trees only are treated the cost would be much less. Experience shows that to free a locality from the caterpillars all webs within a distance of three hundred feet should be destroyed. This indicates the great advantage and need of coöperation among owners of infested estates for it will profit the individual but little to clear his trees if this operation is neglected by his neighbors.

In spite of the fact that this insect is easily controlled by a little winter work, a large part of our citizens neglect it and these are the ones who fill the newspapers with lamentations deep and fervent about the middle or last of May. Where one has been so negligent as to allow the insects to commence feeding in the

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spring, the proper course is to spray the trees at once with arsenate of lead. This insecticide is preferred to Paris green because it kills quickly, sticks to the leaves throughout the season and does not injure the most delicate foliage. If purchased in paste form it should be applied at the rate of three pounds to fifty gallons of water. If it is desired to make it from the ingredients there will be required:

1.2 lbs. nitrate of lead,
.5 " arsenate of soda 96 per cent pure.

Each ingredient should be carefully weighed and dissolved in water in a wooden or fibre pail. The two solutions should be mixed, when one pound actual arsenate of lead will be formed. This charge is equal to nearly two pounds of the paste arsenate of lead and is sufficient for thirty-five gallons of water.

In spraying, a fine nozzle should be used and work commenced at the top of the tree. If the poison once becomes dried upon the leaves it will keep the tree free from further damage by the caterpillars.

If this early spraying has been neglected and the caterpillars become nearly full-grown before their ravages assume importance, the infested trees should be carefully banded with raupenleim, bodlime, tar, ink or other sticky substances. The insects should then be jarred or poled from the trees and at once sprayed on the ground with strong kerosene emulsion. This emulsion will kill all caterpillars with which it comes in contact while the sticky bands will prevent the caterpillars ascending the trees. To make the emulsion there will be required:

¼ lb. hard soap cut fine,
2 qts. boiling water,
1 gal. kerosene oil.

The soap should be dissolved in the water and the oil added, the whole being stirred or churned until cool. The emulsion may be well mixed by pouring it from one pail to another, letting it fall with force. For ordinary purposes it is diluted at the rate of one part to nine of water, but to destroy the brown-tail moth larvæ one part to six of water will be necessary.

Some European authors recommend the collection and destruction of the cocoons and egg masses, but these measures hardly seem advisable to the writer. The cocoons shelter innumerable

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parasites whose work is of great assistance. Thus over forty of the little *Diglochis* parasites have been found in a single brown-tail moth pupa. These beneficial insects emerge from the early formed pupæ in season to attack the later caterpillars or pupæ. Farther, the cocoons cannot be handled without danger from the irritating hairs. The destruction of the egg clusters is a most arduous undertaking and one that cannot be done completely. Winter work will be necessary to clear the webs from the tops of trees where egg-clusters cannot be detected from the ground.

The feeding of the caterpillars in the fall often assumes great importance. Last year at Allston pear trees stripped in May were again defoliated in September by these insects. Since the arsenate of lead adheres so well to the foliage, trees well sprayed with it in early summer will be largely protected from the fall brood. Otherwise fall spraying is advisable, using the insecticide as recommended for the spring application.

Systematic work over large areas is necessary if this pest is to be controlled. That such a result is possible is shown by the success attending the work carried out by the Gypsy Moth Committee during the years 1898–99 when damage by the brown-tail moth was kept at a minimum. How to best deal with it now is a problem agitating many cities and towns. Municipal control seems to offer the greatest promise of success at present. A coöperative effort of all property owners cannot be obtained. Individual work is desultory and seldom thorough. The municipality has the organization and the machinery by which the work of web destruction can be thoroughly and systematically accomplished. That the moth is a pest, even a public nuisance and a menace to health cannot be doubted. Its injuries to property and persons constitute a direct tax upon the community. Why should not the municipality take charge of the work of destroying it, meeting the expense from the public treasury? It would seem that if a pest of this kind is repressed and kept confined to one part of a municipality, all the property owners benefit thereby and can well afford to pay a slightly increased tax as a premium for immunity from loss.

This problem soon will be one of the live questions of the day in this State. In the meantime we can at least keep our own trees clear from the moth, help our neighbors by information and

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advice, and aid every promising endeavor to secure a thorough control of this imported pest.

We may well accept the quaint counsel of Salisbury who, studying the habits of this beautiful yet pernicious insect nearly a century ago, wrote:—

"We must observe that whilst we read in nature's book, every page affords instruction; . . . . and as men are rational beings we should always bear in view the determination as expressed, 'By the sweat of thy brow,' etc. And should know that it is expected of us to curtail the superfluities of nature's works and render those things committed to our care as perfect as our intellect and industry will admit."

Discussion.

Varnum Frost said that farmers kill everything that comes along with Paris green, and asked if that would not do for the brown-tail moth.

Prof. Kirkland replied that it would but it is apt to burn the foliage.

Michael Sullivan asked why the brown-tail moth is more numerous on the pear than the apple.

The lecturer said that we find more elm leaf beetles on English than on American elms and the potato beetle is more numerous on the potato than on the tomato and egg plant; it s the adaptation of insect to food plant.

Thomas Harrison asked if the English sparrow should not be protected, and Prof. Kirkland said not necessarily, for the few moths he kills will not atone for his many other sins.

Prof. L. O. Howard said he was extremely interested in the lecture. He had been horrified to find masses of the larvæ and thought we have a serious problem before us.

Mrs. E. M. Gill told about using the Waters' pruner and cutting off the infested branches.

The lecturer said the importance of destroying the moth should be emphasi ed by the press. There should be a law to compel municipalities to keep street trees clean. The Common and Public Garden are free from the brown-tail moth but the elm beetle is coming and the trees will have to be sprayed.

Mr. Sullivan said that the tree wardens have authority in regard

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to streets, etc., but the problem is what to do with individuals. The market gardeners combatted the gypsy moth appropriation because it provided only for one insect; their idea was to make it general. He thought that a way can be found to protect unimproved lands. Much money has been expended with but little result. He believed that the views of the opponents of the gypsy moth work will change in regard to caterpillars, canker worms and, indeed, all insects.

Mr. Frost said that lice do the most harm. They are the smallest of all. He opposed the gypsy moth appropriation. What can you ever get done by a Commission? The State Board of Agriculture can be trusted.

Hon. Aaron Low, Chairman of the Committee on Lectures, announced that the abstract slips of the lecture would be ready for distribution at the lecture next week, when he hoped for a larger audience.

Thomas Harrison moved a vote of thanks for the interesting and instructive lecture, which was unanimously passed.

MEETING FOR LECTURE AND DISCUSSION.

SATURDAY, January 18, 1902.

A meeting for Lecture and Discussion was holden * today at eleven o'clock, the President, O. B. HADWEN, in the chair.

The following lecture was delivered.

HORTICULTURAL POSSIBILITIES FOR NEW ENGLAND FARMS.

BY PROFESSOR F. WM. RANE, NEW HAMPSHIRE COLLEGE, DEPARTMENT OF HORTICULTURE AND FORESTRY, DURHAM, N. H.

When we scan the whole field of our six states and allow ourselves to comprehend their combined length and breadth of area, hills and dales, mountain tops and seashores, forests and tillable lands, rivers and ravines, how we well up with pride and reverence for our old New England.

* At Chickering Hall.

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I am to talk to you today about the possibilities for horticulture on our New England farms. When I speak of the New England farm you will doubtless think the term so broad in its application as to be meaningless. The Connecticut farm and that in Maine, for example, are perhaps altogether dissimilar, and for that matter any two farms in different sections of the same state have many points of difference. By the New England farm, after all, the average New Englander comprehends very well what is meant.

The average New England farm is not looked upon generally as offering the inducements for a successful vocation that it should. There are many reasons given for this state of affairs which I cannot discuss at length at this time. The thing that interests us most today is how to improve upon our present conditions generally in our rural sections, or in other words, how are we to improve New England farming so that, as time goes on, it will be demonstrated that the trend is not to the cities but that the New England farm offers equal inducements. The signs of the times are we believe wholesome, as what is being done in the way of education through our agricultural colleges, experiment stations, the grange, the agricultural press, farmers' institutes etc., will bring ultimate results. No one can farm haphazardly, in the old fashioned go-as-you-please way, and expect to compete as a business with other professions. Even in other pursuits as in manufacturing it is the modernly equipped machine that is found to be most economical, and those who stick to the old fashioned kinds drop by the wayside. I don't mean to be understood to place farming upon such a high basis that but few can successfully attain to it, but to emphasize that the New England farm must receive that attention and handling which modern methods suggest for expected success. We do not expect a man who knows nothing of the theory or practice of engineering to succeed as one who has shown that interest; none the less can we expect a person to become a good farmer unless he has the natural instincts of success or acquires them through perseverance.

The backbone of any nation, generally speaking, is its agriculture. Go where you will and you will find this statement to be true. Where a nation has neglected its agriculture and has not kept abreast of the times it is traveling toward destruction and

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decay. The more we study the rise and fall of the Roman empire or the history of any of the older nations, the more easily we recognize these facts. Look, for instance, at the ruins of the great irrigation canals of the old world, especially those of Italy and Spain. These designate better times, a fruitful and bounteous harvest, green fields, and a land filled with a prosperous and highly-civilized people. The agriculture having since been neglected, however, it is needless to ask for the results.

To show that agriculture is of the greatest importance to a country, we need only to cite instances such as our great states of Ohio and Colorado, the one noted for its boundless coal and oil fields and the other for its vast resources of mineral wealth. We then realize that these great and valuable productions, for which these states get their reputation, do not begin to amount to their yearly agricultural resources. Take agriculture out of a country and what is left? A rocky, barren country; valuable minerals may abound, but even then, what kind of a civilization? Every one knows.

But what has this to do with horticulture and the importance of it to the New England farmer? Agriculture includes horticulture in the broad sense, and still further, a high degree of agriculture must be attained before horticulture can exist, which, in a way, is a more concentrated form of the same.

Horticulture, to my mind, is the cream of agriculture. In a comparatively new country like ours, it is perfectly natural that general agriculture should first prevail and horticulture come in when the country has been more fully opened, and an æsthetic taste established.

Horticulture is distinguished from agriculture in that it comprises the following branches: (1) Pomology, or fruit growing; (2) Olericulture, or vegetable gardening; (3) Floriculture, or the raising of flowers; and (4) Landscape Horticulture, which approaches landscape gardening. These are the subjects that come under my jurisdiction as professor of horticulture in the New Hampshire College at Durham, New Hampshire. We devote at least an entire term to each subject. The four year students of course get much more.

When pomology is taken up, the subject is divided into three main divisions: (a) viticulture; (b) orchard fruits; and (c)

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small fruits. The grape being the first fruit to study is taken up in the following order: history; methods of propagation; soils and location; fertilizers; planting; culture; pruning and training; extent and importance of the business in New Hampshire, United States, and throughout the world; varieties; insect enemies; fungous diseases; remedies; harvesting; marketing etc. By the time the following subjects have been finished, viz.: the apple, pear, quince, plum, peach, cherry, apricot, nectarine, all of the tropic fruits, the various kinds of nuts, not to say anything about the small fruits, as raspberries, blackberries, currants, gooseberries, strawberries, cranberries etc., a person ought to have some sort of an idea of the scope of pomology. Similarly, I might take up the ten classes of vegetables and show the scope of olericulture or equally that of floriculture and landscape horticulture, leaving out entirely the question of greenhouse construction and management, the wholesale seed and nursery businesses, and such important studies as the evolution of plants, plant breeding etc.

We cannot help but recognize, therefore, that horticulture extends over a broad field and contains much in its grasp, doing much for a nation's welfare and happiness. Too many people think horticulture is simply fruit growing; especially is this true where fruit raising is the predominating industry; others recognize only vegetable gardening as the more important horticultural operation, while the florist doubtless thinks all others are comparatively insignificant as compared with his business, where Latin names and so many of them abound. There are whole armies of men throughout our country interested in one or more of these various pursuits, and, too, generally speaking, they are of a class above the average in intelligence and, in fact, comprise our best citizens. There is something about horticultural industries that calls out the better instincts of man, due perhaps to his closer study into the great heart of nature herself. Horticulture must be considered as refining and elevating. Fruits, flowers and landscape were never intended for association with mean or ill-tempered persons. It has been said that plants and flowers are all right for women and children to fuss with, but are belittling for men. Pity on that man who cannot see beauty and

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even pleasure in a well-kept house surrounded with beautiful flowers and all of the luxuries that come with farm life.

The first point I, therefore, wish to emphasize is, that horticulture for New England farmers will more than return the interest upon the investment in pleasant homes and happier lives. There is very little trouble when passing through the state to determine which homes present cheer and welcome. When on a drive with the state entomologist of West Virginia, we found ourselves at some distance from any town where we could get dinner, and we resolved to stop at the first farmhouse that looked inviting. Although we were in a fairly prosperous section we drove for a full half hour before finding a home that met these conditions. This place had a garden; the grounds were well kept for a comfortable farmhouse, and we found our judgment was not misplaced. Not only were we able to get a good dinner, but found people whom we remember as friends. Another farmhouse in the same state, which I wish to contrast with the above, is one with a single peach tree which yielded two bushels per year it is said, and the family never sample the fruit because it has such ready sale on the market. This tree was ten years old when last I knew it, and I doubt if it has ever occurred to the farmer that more would be profitable. I don't believe this is an exaggeration over what can be found on many New England farms today. If there is any class of people deserving of fruits, and plenty of them, it is the farmer and his family, and who can have them more easily?

All lines of horticulture are found in our New England States today. When we are asked to what extent these various industries are followed, however, it seems to me this question is not and can not be answered enthusiastically. True there are exceptions but from observation I believe that we drop very far short of our possibilities. When our men of apparent horticultural interests are indifferent and pay little attention to modern methods or care little for exhibits, meetings etc., wherein much good might be gained to the benefit of all, what can we expect from others?

Were our markets far distant and competition close as in many sections of the West, doubtless conditions would bring out our keener business methods, but is this any reason why we should

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be any the less careful about our opportunities? I can see little reason for the existence and great good of strong meetings in one section less favorably located, while in others with great natural advantages comparatively so little interest is taken.

During the past few years work at the experiment stations has, we believe, awakened more or less interest, but much of the time has been spent in finding out to what an extent the horticultural interests really prevail in various sections.

The possibilities in horticulture for New England farmers I believe are almost unbounded.

Were our people aroused to the interests of horticulture and would they devote an equal amount of attention to studying out the problems in horticulture as they have in dairying, I predict that for the time and money invested the results would be even more profitable. To demonstrate, I ask our agriculturist how much is made per cow per year, over and above cost of feed, shelter and labor, and I am told that, on the average for the country, nothing is made, as it is estimated that a cow must produce 3,000 pounds of milk to meet her expenses alone. Whatever is produced, in other words, over and above this amount, therefore, may be considered as profit. I do not care to go into the discussion of the dairy problems, nor throw any cold water on the enthusiasm along this line of agricultural progress in which New England deservedly ranks well at the top, but to emphasize further by comparison for the benefit of horticulture. I ask if a good thrifty Baldwin apple tree does not bring in as much profit as a cow. I doubt if I could get many in this audience to exchange a cow for an apple tree, but if figures be true, and the one under comparative conditions is as profitable as the other, I say, give me the apple tree. I am sure that while getting up at four o'clock in the morning, or tending cattle all winter is not a hardship to a man who is used to it, nevertheless most people would prefer going to work at seven o'clock. On the other hand an apple tree amounts to comparatively little, if it receives no care. With a little care, however, what a liberal response! After a Pomona Grange, attended a few weeks since, various farmers said that had it not been for their apple crops from time to time, they could not have kept out of debt. Upon inquiry, however, I found, as is generally the case, their orchards were but indifferently

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cared for. Another man at this same meeting informed me that his young orchard which he set in 1891, and had given good care, yielded twenty-five barrels of fine fruit in 1899.

When I was out with the State Board of Agriculture attending farmers' institutes in the fall of 1896, the season of our over abundant apple crop, the subject given me to talk upon was "orcharding" and each time when introduced a contemptuous smile was easily detected throughout the audience. Through my discourse at that time I endeavored to overcome the mistaken idea that because that season was an off year with its over abundant apple crop, it was no reason why in years to come, the crop would not justify itself. It is only by looking at a business like that of apple growing, for a period of years, rather than a single one, that we get an idea as regards fruit growing. I remember making the prediction at that time, that a period of low prices might result in a benefit to the industry, for larger export trade was made that year than ever before and, as well, an undoubted increase in home consumption. This tends to strengthen the demand for future crops. It is needless for me to ask if these predictions have come true. In 1898 we sold from our old trees at the college alone five hundred dollars' worth of apples, and these trees are far past their prime of life. The season of 1899 we secured about an eighth of a crop which brought good prices. In 1900 we again sold a large crop of fine fruit at good prices and the past season our crop was light.

I mention our own experience because it represents fairly well the remainder of the state. Many instances have come to my notice where in the year of over-production, a few people in various sections cut down their apple trees on account of their great discouragement. Is it necessary for me to repeat the old saying "not all fools are dead yet"?

Apple growing is an industry full of the greatest of possibilities, well worthy of more attention by the New England farmer. What has been a greater blessing to western New York than her great apple orchards? I was surprised when for the first time I visited some of the farms about Rochester, in that state, and found farmers whose main livelihood came from the apple orchard. Only recently when traveling West, I by chance met a large apple buyer and cold storage man. Among other things he said that

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although Missouri and Arkansas can boast of their mammoth apple orchards, nevertheless four counties in New York govern the trade of the world.

The New England states are equally as well adapted to the growing of the apple as New York, and not only do I wonder why more apple orchards are not set, but as well, how it happens that capitalists do not invade our states and take away our so-called birthright. I have heard of agitations in the latter direction only during the present year. While I am enthusiastic in fruit growing, I should far rather see a strong and healthy internal growth in our state, in which the general New England home is the gainer, rather than a monopoly. When at Chester, N. H., a few years ago I had pointed out to me orchard after orchard, which were the results of the efforts of one man during the past generation. His work has resulted in this section taking preëminence in the state as an apple section. These trees are on the decline, however, at present, and unless they are replaced with new plantations it is but a matter of time when this industry has passed here. To a person who has lived for the greater part of his life in the West to come into New England and see the neglect, especially of fruit trees, which offer so encouraging returns, it is hard to understand. After living here for the past six and one-half years, and having more or less of an opportunity to visit the various sections I have become more and more convinced that for general horticulture, and especially apple growing, there are no states in the Union that offer greater inducements than the New England states. Had I the time and means nothing would daunt me from starting an apple orchard of my own; and were I a farmer, much less would I hesitate enlarging my area in orchards. It is a fact that apple trees do not come into bearing immediately and simply setting the trees in the ground never to be looked after, other than in an indifferent way, will not bring results. This sort of negligence in fact never brings results in anything. The old saying, "a laborer is worthy of his hire," is too true, and a man usually gets pay in this world in so far as he has backbone and energy to accomplish something. I often feel after talking at a meeting of this kind, that I am too enthusiastic as I ever fear lest some person may glean only that portion of my talk that will give him enough enthusiasm to set out

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some fruit and then, "cool off," leaving the poor trees to linger and die. It is the man who comprehends the whole situation from beginning to end, and who begins with system and method, that succeeds. This is the kind of men we want to enlist in our fruit raising in New England. I am acquainted with a prominent actor who had amassed a large fortune, and becoming infatuated with a certain inland watering place while touring there in summer, finally concluded to purchase a farm facing the lake and upon this to devote his summer vacations. He sent for catalogues, far and near, and resolved to make his farm a paradise. Seeds, fruits, and vines of all descriptions came pouring in by freight, express, and mail, and all hands were put at work, the actor among them, to set them out.

It is needless for me to say the outcome could have been easily foretold. It was not until some two or three years had elapsed that the proprietor awoke to a realization of what such a thing means. The farm has been sold, the actor no more enjoys his former pleasure, at this particular place; and furthermore, this instance has been a drawback in many respects in that section. People say what is the use of going into fruit raising, and point this instance as an example. I mention this to show that a person should comprehend and understand his business, whether it be horticulture (fruit growing) or otherwise. We may have plenty of literature on the subject also, and even then these mistakes like the one alluded to can be made. Literature is of little account unless it is read and digested. I was at a grange meeting and talked upon the strawberry; one of my attentive listeners asked several questions, and finally asked why the experiment station did not print and send out such information. I answered that such had been done in this very instance. Upon further investigation I found this person's name upon our mailing list, thus demonstrating that this very information was already available in his own household.

Examples like this convince me that discussions at our granges, institutes and meetings of this sort are necessary. Many listen who will not read.

As to other fruits than the apple in New England, while perhaps they cannot be recommended for so general a crop for all

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farmers, nevertheless, they should be given due consideration and have their place on our farms.

General horticulture upon the farm must commonly be considered of second importance. In order to get any results there must be a definiteness of purpose. What to grow will depend upon a person's tastes and likings. One person will make a success with one thing and another with another, but there is something in all lines for the business person.

Horticulture and agriculture many times go together, and the two make a success where either alone might fail. Each person must necessarily study out his own best conditions. Dairying and gardening go well together; where it is necessary to peddle milk the same wagon will carry the vegetables to market. Other combinations can be made as gardening and pig raising, chickens and plums, and general farming with orcharding.

To make a success in anything, I care not what it is, a person must have a comprehensive idea of it. With this well understood the subject before us, "Horticultural possibilities for New England farms," may be considered under the following heads:—

1. Definiteness of purpose.
2. Basis of estimation.
3. Knowledge of modern culture.
4. Study of marketable varieties.
5. Executive ability in marketing.

As farmers we should have a definiteness of purpose which shows itself in our system of rotations, adaptable crops, etc.

With up to date methods of farming I am sure horticulture will appeal to us in some of its various forms, and it is only those of us who attain to this degree of proficiency that will make much success. A poor farmer will rarely make a successful horticulturist. Horticulture is more intensive than general farming, and to my mind is the cream of agriculture. It may be that horticulture will remain of secondary importance, as it is today on our farms, for some time, but the thing of utmost importance is that whatever is attempted should be with definiteness in view. If, in spite of our neglectful methods, fruit growing brings the most profitable crops found on many farms today, what, I ask, can we make of it if given more definite consideration? With a wholesome public sentiment in favor even of apple-growing, to say

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nothing about the innumerable other horticultural crops, New England can be made a country unsurpassed.

We can say without hesitation that the apple crop is a sure paying crop everywhere in New England. Of course different sections differ more or less locally as to soil, exposure, etc., but by studying the existing conditions the problem can be easily solved. With the rapid development or evolution of American fruits there are varieties adapted to all conditions of soils and climates. With the introduction of Russian blood we have varieties of apples and cherries that withstand even the severe winters of northern Vermont, New Hampshire and Maine. Already we find such varieties of apples as the Bethel, Arctic, Oldenburg, Mackintosh, Wealthy, Pewaukee, Wagener, Scott's Winter, St. Lawrence, etc., coming from these sections in wholesome competition. This is indicative of what can be accomplished when men set about it to overcome obstacles. I attended a local fair at Bethlehem, in the midst of the White Mountains, a few years ago and to my utter surprise found that the horticultural displays of not only flowers and vegetables were fine, but their fruit represented as many varieties and exceeded in display, anything that I saw that season. I was informed that the Baldwins were grown in a protected place, but the other fruits simply received the ordinary care customary in that climate. When such a display can be grown in the heart of the White Mountains, we need not complain of our conditions elsewhere. One man is reported as growing a few acres of strawberries that year, and selling the product at an average price of twelve and a half cents a cup which is equivalent to a pint. Surely strawberries are hardy everywhere and it only demonstrates what the possibilities are in cold climates with this crop. Mr. Howe of Lancaster, New Hampshire, is a large apple grower in that region and says the Bethel apple is to that section what the Baldwin is to southern New England. When I was on a lecture trip with the Maine State Board of Agriculture last summer, I found that the Arctic apple is being very largely planted in the north-eastern part of the state. I was surprised also to find, when on this trip, a gardener at some distance north of Bangor growing and shipping all kinds of small fruits for the Boston market. I might go on further to demonstrate that even in our colder sections of New England the possibilities

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for successful horticulture are even greater than is generally supposed. Here as elsewhere the man at the helm in the larger half of success.

For central and southern New England little need be said upon what we can grow here, before such an intelligent audience as always forms the constituency of the Massachusetts Horticultural Society. This Society has listened to such men as Hale of Connecticut on the peach, and others equally experienced and successful with other horticultural crops. The results of such men assure us of the success of the specialist; now with a definiteness of purpose and an understanding of their culture these products can be raised equally successfully in a limited way on the average New England farm.

(2) Can we estimate with any degree of accuracy what can be expected in the various pursuits on the New England farm? This is a question well worthy of our consideration. I thoroughly believe it is our duty and privilege to estimate and figure out our chances for success or failure in all farming undertakings. No one should undertake a business who has not the possibilities at least for what he seeks. To demonstrate, we hear so much today about farming not paying from men who are already engaged in it. I have taken occasion to examine into many individual cases of this kind and find the conditions for success are impossibilities to begin with. One man whom I know has a one hundred acre New England farm, two-thirds of which is forest or natural pasturage, so called; the remainder has been under cultivation at some time or other, but nine acres are all that he tills each year. Now the forest land furnishes him his fuel and not much more under his method of management; the meadow his hay, which about compensates for the labor in harvesting it, while the nine acres under cultivation must produce his salary. He raises an acre or two of potatoes and the remainder, with the exception of a small farm garden, is devoted to ensilage corn. He makes milk for retail trade, carrying about ten cows, has a span of horses and thinks he needs a cheap hired hand. This man is staring providence in the face and attempting an impossibility when he courts success under his conditions. His taxes, horse and cattle foods, hired labor, depreciation in buildings and tools, etc., amount to more than his income. He ought to know that he is attempting

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an impossibility, and finding fault will never overcome his conditions; think of it, only nine acres, which if it produced maximum crops each year would not give him cash net returns of over $30.00 an acre for the crops he is raising, or $270 possible income for the year.

If a man expects to make a success he must form some idea of his real worth, and what he ought to make as a salary for his own satisfaction; then study out what he must do in the way of farming to accomplish the desired results. If I consider myself only a $300 man and I am growing hay for market, if my land is in good heart and I can produce an annual yield of three tons per acre and this sells at say $15 a ton, it will take only ten acres to satisfy my demands, allowing one ton per acre for expense in harvesting. If I will not be contented with less than $1000 or $2500 a year I must greatly enlarge my base of operation.

Here again is where horticulture comes to the New England farmer's assistance if he courts it. If the nine acre man had devoted his attention to some horticultural crops, such as an acre or so of currants or combination of any of the following crops as raspberries, onions, squashes, cabbage, tomatoes, celery, cucumbers, gooseberries, strawberries, peas, sweet corn, etc., or orchard fruits, if well taken care of, his chances for success would be possible.

I know of one man in New Hampshire who netted $285 on currants from one acre four years after the plants were set. An acre of currant bushes set four by five feet takes two thousand one hundred and seventy-eight plants.

Mr. Crawford of Ohio has raised seven thousand quarts of strawberries on a single acre. You and I ought to raise one-half that amount or three thousand five hundred quarts which at ten cents equals $350.

Muskmelons in hills five by six feet make one thousand four hundred and fifty-two hills to the acre, and the small Netted Gem kinds will average ten or more to the hill under good culture or fourteen thousand five hundred and twenty melons, which at four cents apiece would bring $580.

Sweet corn planted three feet by nine inches allows nineteen thousand three hundred and sixty stalks to the acre or one thou-

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sand six hundred and thirteen dozen, and if sold at eight cents per dozen gives $129 per acre.

Six hundred bushels of onions per acre is not an unusual yield, and the average price for them is generally good. I know of one man whose success with onions has been the means of awakening the interest of many others, and resulting indirectly in the whole community becoming prosperous. Another New England man of my acquaintance has averaged more upon a very small area of land, the main crop of which is onions, than any general farmer about him whose invested capital is from ten to fifty times as great.

Squashes, although they have been hard to raise during the past year, nevertheless offer good returns. The sale for scalloped and crooknecks is usually limited, but the early marrows and later sorts give reliable returns.

Celery is a crop that if well grown, and the culture is simple, usually pays well. An acre of celery set in rows three feet apart and six inches in the row will contain twenty-nine thousand and forty plants or two thousand four hundred and twenty dozen, which, should they bring only twenty-five cents a dozen would give $605 returns. Celery is also a second crop, an early crop of something else being taken first. A New Hampshire man, not a farmer, tells me that he raised in his small garden on a city lot the past year $110 worth of celery on a sixty by sixty foot area or at the rate of $1400 an acre. The same season he raised two outdoor crops of heading lettuce on a bed six by sixty feet, the sale of which brought $15 or at the rate of $1815 an acre. While this seems large it only means a price of about two cents a head and a square foot of space to grow it in. His market was simply the retail grocery stores of Laconia, New Hampshire, and not fancy prices.

Cabbages pay better than most people realize, and what farmer cannot raise them. Set two by three feet, an acre requires seven thousand two hundred and sixty plants. The price per head or pound varies greatly but anyone can easily estimate his possibilities with this crop. Last spring we grew the newly introduced Early Spring variety, setting it two by two and a half feet apart, and as the heads averaged five pounds and were round and early, we realized three cents a pound for most of it, which was at the

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rate of $1305 an acre. Even at two cents a pound it brings $870.

Tomatoes are as commonly used as almost any crop grown. Although the tomato is one of the rankest of plants and an assured producer, it is ever in demand in New England. Even with an increased demand for the canned product, which largely is shipped into New England, our local markets continue firm. Not only do we find a market for all the ripe fruit but I find gardeners who are growing the late Buckeye State variety simply for green tomatoes. The green fruit when well graded brings fifty cents a bushel at retail or forty cents at wholesale. Five hundred bushels per acre of green fruit is a fair estimate which at forty cents equals $200 which can be relied upon. For ripe fruit the price will average seventy-five cents or more for the season. Our Earlianas, one of the newly introduced early varieties, sold during the fore part of the past season at $3 a bushel.

Small fruits of all kinds sell well here in New England. I have already referred to the red currant, but raspberries, both the red and black-caps, are in good demand, and from my experience usually sell for a third to a half higher price per quart than in the West. Blackberries and gooseberries are often not to be had in some of our fairly good sized towns.

There are many other vegetables that I can not take the time to emphasize here, which can be made paying crops in a limited way if not on a fairly large scale on our farms. Bunch beets sown in rows sixteen inches apart and thinned to three inches in the row will give forty-three thousand five hundred and sixty bunches of three beets in a bunch to the acre. These, if sold at an average of three cents a bunch, give $1306.80 as the returns.

The plum crops should receive more attention generally on our farms. While the black knot, plum curculio, and fruit rot, are somewhat troublesome, they nevertheless should not discourage anyone if the trees are given the necessary care. At the New Hampshire Experiment Station we have fruited Burbanks at the rate of one and one-half bushels on five year old trees; and I was interested to note an article from Mr. A. A. Halliday of Windham County, Vermont, in a recent publication, stating that he had secured as high as seven bushels per tree from six year old Burbank trees. When we realize that one tree requires an area

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of only sixteen by sixteen feet, or at the rate of one hundred and seventy trees to the acre, surely the returns must be good. Other varieties of plums as Abundance, Lombard, Chabot, etc., are equally good.

We have one man at Wilton in our state, who raises on an average eight tons of grapes a year, and has had success in growing this fruit for the past twenty years. Some think the grape not adapted for many sections of New England, and still others think that even if they could grow them, they would be unable to sell them on account of the competition with the quantities of this fruit that come into New England from other states. I believe both of these notions are erroneous. Adaptable varieties can be grown in most sections if properly handled, and there is always a loyalty to home grown fruits. Mr. Bachelder, the man referred to, tells me that all of his eight tons are sold within a radius of five miles of his place. The Moore's Early, Worden, Wyoming, and Green Mountain have all done well at the New Hampshire Experiment Station.

(3). There is little reason why a man with any interest in his calling should not be able to inform himself in regard to the principles of the modern culture of any of our horticultural crops. The days of apprenticeship methods of finding out how to do things are relegated to the past; today we have plenty of literature and the main test is putting it into practical application. Culture, however, means much more than we are liable to credit it with. The culture of any plant means ideal conditions for its development for whatever purpose desired.

(4). Too much attention cannot be given in studying varieties. These are changing constantly, and it is highly necessary that we take advantage of those that are best adapted to our conditions and the markets.

(5). Executive ability is needed upon the average New England farm, for success, as much as it is anywhere. The average New England farmer needs to study business methods, and horticulture, with its greater intensiveness and variety, will assist very much in testing the business ability of men everywhere should they engage in it. Perishable fruits or vegetables demand active business methods in handling at the right time, while the other farm crops like hay, milk, beef and wood are handled "any old

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time," as they are staple commodities. Business methods stand for a large share of success in anything, and it must not be lost sight of on the New England farm.

Horticulture on the farm has its place, and should not be neglected. It pays for family use if in no other way. Horticulture on the farm pays for the education of the young. Horticulture on the farm pays, for it keeps the boy there. Horticulture on the farm pays, for it makes the pocket money. Horticulture is education in plant life. For example, grafting, pruning, budding, propagation, rotations, varieties, soils, fertilizers, cultivation, etc.; these and many more can be studied. It is with these and many other advantages that a much broader horizon is attained. Study possibilities and aim high. Horticulture demands time. Peter Henderson recommends that seven men and three horses should be had to run a market gardening industry of ten acres successfully; and that when embarking in such an enterprise a capital of at least $300 per acre is necessary. One thing that ever needs emphasizing is, do not attempt too much.

It has not been thought advisable nor is it possible to go into other than a general discussion of the subject of "Horticultural Possibilities for New England Farms" in the short time allotted me. Such subjects as details in small fruit growing and various other vegetable and fruit crops, not to say anything about general floriculture and innumerable other questions of horticultural interests, cannot be touched upon; they in themselves would each require much time and afford material worthy of much consideration.

In closing I simply desire to say that under proper husbandry, and modern methods, I believe that we at present little realize the possibilities of horticulture in its various branches as adapted to the conditions of the New England farmer.

Discussion.

A gentleman said that there are some farms that will support a cow but will not support an apple tree. Most apples have failed with him. He has raised the Bethel and Jonathan. His grapes bear abundantly but do not ripen. His farm is about forty miles from Lake Memphremagog.

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The lecturer said that Professors Craig and Saunders believe in the production of varieties that will be adapted to these localities. Consider what has been done in Minnesota. The majority of the Russian apples were autumn varieties but we are getting now varieties of all seasons.

William C. Strong said that he was born in the same region as the former speaker (Hardwick, Vermont), and that the apple trees there were vigorous and abundant in produce. He said that there was one important point which had not been emphasized: — the quality of western apples does not compare with the solid fruit of New England which is superior to almost any fruit in the world.

In answer to a question of Thomas Harrison regarding fertilizers, Prof. Rane said, Don't overfeed with nitrogen. We do not want trees that take a thirty foot ladder. When the tops are formed substitute potash and phosphate for nitrogen. Grow fruit instead of wood.

Michael Sullivan asked whether the lecturer would recommend the continuous culture of apple orchards to get good fruit.

Prof Rane said that while trees are growing they need continuous culture to keep them going. After fifteen years the question of culture would be left to the man's own judgment. If the trees are hardy and healthy they will need but little fertilizer. Mr. Sanborn says that his hay crop on nine acres has paid, and his apples also, but he ploughs up when his trees show signs of needing it. One ton of hay per acre will not pay, but three tons will, and if you can get them and a crop of apples at the same time you are so much better off.

Mr. Sullivan said that eight years seems a very short time for Baldwins to come into bearing. He has had them in twelve years. He raises vegetables but finds his fruit quite as profitable as any part of his business.

President Hadwen said that the product from cows sold every day while apples sold once a year only. A young man with a family needs an income every day. His experience was that he needed both. One advantage in having apples in grass land is that you can get a crop of both if you feed for both. Apples from grass land keep better.

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Thomas Harrison asked the lecturer what to do with land that has only an inch of soil.

Prof. Rane replied that a man must study his farm, and suggested sheep raising. Where sheep cannot be raised on such soils forestry comes in. Thin and light land should be turned over to forestry.

He said that he did not want to leave the impression that he was not in favor of a few cows to supply the family.

Varnum Frost said he thought farming was overdone and played out in New England. You cannot get more than a new dollar for an old one; last year, not more than seventy-five cents. The prices named by the lecturer are three times what we can get here. He thought the President was correct in regard to the keeping qualities of apples in grass land.

Prof. Rane said that the New Hampshire Experiment Station has paid all its labor by its products.

MEETING FOR LECTURE AND DISCUSSION.

SATURDAY, January 25, 1902.

A meeting for Lecture and Discussion was holden * today at eleven o'clock, the President, O. B. HADWEN, in the chair.

The following lecture was delivered.

THE BUSINESS END OF HORTICULTURE.

BY PATRICK O'MARA, New York, N. Y.

Ladies and Gentlemen:—

When our good friend Mr. Low invited me to read a paper on some subject connected with horticulture I explained, as I did once before, that while being grateful for the honor, I was at a loss to know upon what lines I could prepare a paper worthy of the attention of this Society, second as it is to none in the world. I solicited his advice and the advice of the committee through him and was further complimented by the assurance that anything I should prepare would in all likelihood be satisfactory to them. Being thus, so to speak, at my wit's end, I chose "The Business

* At Chickering Hall.

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End of Horticulture" as a title for such observations as I might offer you.

I will stick to the text as closely as possible; but at the very outset the temptation to wander is irresistible. Some may ask if I consider the end of horticulture to be business. This prompts me to observe that I am not bold enough to prophesy the end of horticulture. It also prompts me to observe that since coining the title I have been industriously engaged in a mental quest for the business end of it, but up to the present moment I have not run down any end that looks like it; or tied a knot on it. The quest for the business end of a bee or a mule would be a simpler matter.

An acquaintance of mine in the trade once sagely remarked in my hearing that in his opinion any fool could grow good plants, but that it required a man of great wisdom to sell them. It looked to him as though he had certainly discovered the business end. I may remark parenthetically that the gentleman referred to was a grand and gloomy failure in both departments; he is a fair sample of the "know-it-all." There is a story told to the effect that a young man who was ambitious to succeed in business once obtained the ear of the late Commodore Vanderbilt and sought his advice. He is reported to have asked him whether the secret of success in business was knowledge or some fortunate inspiration. The gruff old Commodore tersely replied; "No, my young friend, not inspiration; perspiration, sir, perspiration." And it may be truly said that if the business joint of horticulture is anywhere in particular it is at the elbow and it should be well greased. Eternal vigilance is the price of much that we have and hold; it is particularly the price the successful horticulturist must pay. The "art that doth mend nature" is not one for the *dilettante;* it is one for the sober, steady, persevering, painstaking, intelligent worker. The cry goes up from many who fail: "I have no luck with my stuff like so-and-so." That wail is even heard from the professional florist who ought to know better. If he watched Messrs. So-and-So he would discover that they are men who studied cause and effect and had the sense to apply as well as the energy to execute. They might perchance be unable to prepare an exhaustive treatise on structural formation of plants or give an analysis of the soil; their methods might be

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rule of thumb ones; their school might be, and undoubtedly in ninety-nine cases out of a hundred is an empirical one; but they obtain gratifying results and that is the main point. Doctors' children are not always the healthiest. If there is any calling, trade or profession which requires keen discrimination, quick perception, intuitive grasp and prompt decision in a greater degree than another, it is the horticulturist's. He is dealing with the forces of nature, his charges are mute and cannot announce when something has gone wrong. He must see it. He must do more than that; he must know, if he is to be successful, what is likely to injure them and see that such is avoided. An ounce of prevention is worth a ton of cure in horticulture. Locking the stable door after the horse is stolen is mighty poor satisfaction. These random remarks I trust will be found to have some pointed reference to the "business end" of horticulture.

My experience in the trade has been exclusively along the lines of commercial floriculture so that necessarily my observations will be mainly confined to matters less or more intimately connected therewith. I have enjoyed the advantage of some experience in other branches. I 've rubbed elbows with that interesting personage known officially as the "Ornamental Horticulturist," or, as one of my more learned editorial friends would have him dubbed, "The Ornamentative Horticulturist." A few years ago he was, I suppose, the artist who made a striped elephant with a fluffy tail and planted him on the lawn, who made butterflies and ships, birds and beasts biped and quadruped, who had wheels in his head and got rid of them by expressing himself in wonderful convolutions, rings eccentric and concentric; all in plants that outrivaled Joseph's wonderful coat of many colors. The pity of it is for one of the business ends of horticulture that his tribe did not keep on increasing. I am reminded of a story in connection with that branch of gardening. An itinerant disciple of the "art that doth mend nature" was called in to lay out some beds on a modest lawn. His "art" had not risen above round, square, and star-shaped beds, so when his whilom employer expressed a desire to supplement them with an oval bed he looked embarrassed; he was not quite sure what an oval bed was. It was explained to him that it was egg-shaped and he understood. When the owner came around the following day and looked at the oval he was dis-

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appointed; it was overweighted at one end. He reproached the "artist" concerning it and a great light broke in upon him when he was told by him: "Sure, sir, you told me to make it egg-shape; and isn't an egg bigger at one end than the other?" There is some humor even in horticulture. A prospective purchaser went into one of the seed shops, not a thousand miles from here, where garden and farm implements were displayed and asked a young clerk if he sold whiffle trees. He was gravely informed that they did not keep them there but he would inquire of the nursery department. Another purchaser who was giving an order and soliciting advice from a clerk as to quantities of seed wanted for certain numbers of plants finally ordered a pound of raffia. The clerk thinking he was ordering too much of it gravely asked him how many plants of it he wanted to raise? A tree agent some years ago astonished the home office with the quantities of tree pæonies he was selling. Upon investigation, it developed that he was recommending them as shade trees, which had in the summer the wonderful flowers shown in the picture book which he carried. These are incidents connected with the business end of horticulture and they do much to relieve the tedium of the day and hour.

Now, let us consider where the business end, or rather ends of horticulture are to be located. First in importance is the seedsman. Even here there are to be found differences; all do not travel on the same road. There is the box trade for instance, a separate and distinct branch. Long before a town can support a seed store the box makes its appearance. The druggist, the general storekeeper, the jeweller, the grocer, almost any shopkeeper will be the distributing agent for the seeds. The growth of this branch of the trade is something marvelous. In one generation, we have seen one firm expand from a little shop which barely paid the living expenses of the founders into a great institution, which ranks high among the finest commercial houses in the country. So systematized is this particular branch that the seed box follows close upon the heels of the settler into the most remote quarters. Not many years ago I was in a thirty day old town seventy miles from the nearest railroad station, yet the seed box was there before me. Another branch of the trade was represented among the first settlers there, viz.: the seed grower; so

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we see that two branches of horticulture are found in the forefront of the developing line. The seed grower is a horticulturist, who does not figure very prominently in horticultural essays, and yet he is an important factor. Many people believe that the large seed houses have one big farm where they grow all their seeds. That would be impracticable for the reason that different seeds can be better grown in different localities. Peas and beans can be better grown in northern than southern localities. California will produce better seeds of many kinds than any other part of the country. Portions of Nebraska produce the best seeds of vine crops to be found in the country. Long Island seems to be the ideal place for cabbage seed production. Portions of Connecticut are unrivalled for the quality of onion seed produced. Northern New York and Maine are unexcelled for potatoes The great Northwest has exceptional possibilities as a seed producing country. Europe still supplies its quota of seeds and bulbs, but with the vast extent of territory over which floats the American flag, with the wide range of temperature, the rich soil, and the energy and intelligence of the men engaged in horticulture, there is every reason to believe that in the near future we will not only produce all we need ourselves, but we will be able to control the markets of the world in seed production. The seed grower for the most part is a contractor, who takes the stock supplied by the seedsman and delivers the entire product. His work is supervised by the seedsman, who inspects the growing crop and carefully "rogues," that is, destroys any plants which are not up to type, which, in other words, show a reversion to an inferior type. It often happens that an improvement will be apparent in individual plants and these are carefully marked, the seed product kept separate and sown the following season. This is the source of many of the improved varieties. It is obvious that the greater the amount of care bestowed on inspection, the greater the intelligence brought to bear upon it, the better in proportion must be the result. It is upon this care and intelligence that reputation is based, hence the difference in stocks sold. The seed growers are often hybridizers, and to the patient work of these men we owe many of the improved varieties now in existence. The greatest vehicle, unquestionably, for developing horticulture is the catalogue of the seedsman, the nurseryman and the florist. The

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first is beyond doubt the most important in its effects and might be called the centre from which the business ends radiate. The millions of catalogues distributed annually are an inspiration to the recipients and to the hundreds of thousands who are influenced by seeing their neighbors engaged in horticultural work. Great is the responsibility of the catalogue firms and great is the labor involved. It is undeniably the most trying of all the business ends of horticulture. The men engaged in it must be ever on the watch for new and improved varieties; they must lead and not follow popular opinion; but yet they must be cautious not to get too far in advance. They must be ready to explain why crops fail, they must be able to advise remedies, they must be entomologists, pathologists, be up in soil chemistry, and when the great extent of the country is considered, it is readily understood that the task is not an easy one. They must be ready to tell when and what to plant or sow in farm or garden from Puget Sound to Florida Keys, from Aroostook to San Diego. They must be able to tell the dear old lady what is the matter with her sick geranium or her debilitated begonia. They must be prepared to have their honesty impugned whenever a clerk makes a mistake and sends the wrong variety, they must be prepared very often for the same contingency when, from causes entirely beyond their control, crops fail, plants die or seeds do not germinate. To be successful, the catalogue man must be not only resourceful in business methods, enterprising in developing and introducing varieties of merit, but he must be optimistic, he must be able to communicate his optimism to his customers, he must be liberal in his dealings, be ever patient, be a natural diplomat, and above all things be scrupulously careful to send out only the best obtainable.

What is said of the seedsman is also applicable in a great measure to the nurseryman. The details of his business are hardly as numerous, however, consequently not as trying. His business is in a larger degree localized, which tends to simplify it. With San José Scale, Peach Yellows and other troubles incident to his stock, and the legislative efforts to control them, he is not without troubles of his own. The nurseryman, too, must be up in the "ologies," even more so perhaps than the seedsman; he must be a fair lawyer as well and be an expert in transportation matters. The lithographer and the tree agent are powerful agents

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to the nurseryman. The latter armed with his book of plates wends his way over the face of the land, in many cases reviled and thust out, treated little better than the hobo. His book is sneered at, and while it may be a trifle highly colored and the size of the pictured flowers and fruits may be a little exaggerated, yet a long experience has shown that such are the best fitted to tempt the wavering into purchasing something which will really be a benefit to them. It is a case where the end justifies the means, if there ever was one. Many a garden would be given over to weeds which now supports a few fruit trees and small fruits, many a porch and dooryard would be as bare of living ornament as the proverbial "Job's Turkey" was of flesh and feather, were it not for the tree agent and his book. That business end of horticulture is not "one grand sweet song" for the men engaged in it; the emoluments arising from it will not make plutocrats of them. Be patient with them then, if not for themselves at least for the good they accomplish. The good they do lives after them; the evil is cut down and cast into exterior darkness.

The grower for the catalogue firms is another of the business ends of horticulture, that is the man who grows plants in quantity on contract, or who grows them on speculation to sell in large quantities. His field embraces greenhouse plants, fruit plants, hardy outdoor plants, shrubs, roots and bulbs. It is a safe business on the whole, but it is not capable of great development like the catalogue trade. It is generally followed and taken up by men who have some land, but little working capital, and the profits are as a rule very meager. Because of the limited capital with which it can be entered, provided the land is already secured, a great many of the smaller nurserymen, florists and even farmers have entered it of late years, and it may be safely said to be a well plowed field at the present time. Because of the fact that these men are not in touch with the retail market, they grow many things for which there is not ready sale; failing to obtain buyers for these at remunerative prices, they are frequently taken up at a sacrifice and pushed by catalogue men to the detriment of better things. I think it may be accepted as an axiom that the successful catalogue business man must be a bona fide producer, either under his own direct control or by the contract system.

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This applies to plants more than to seeds or bulbs which can be treated as merchandise. The expense of catalogues, advertising, packing and growing hardly admits developing a large business by buying plants and selling again; besides there is always the trade grower who has a surplus of something inferior to offer at a tempting price and it is well to beware of "the great pennyworth."

The business end of horticulture represented by the cut flower grower is perhaps the simplest, in a business sense of any, in that the skill of the grower is the paramount issue. His product is sold for what it is worth on sight. Although the market takes exasperating tumbles, he has little if anything to do with it. He is saved the nerve wear incident to bargaining, planning how to get rid of his product, how to get his money after he has sold it, and the many and vexatious problems incident to barter and sale. I speak of the grower who supplies the large cities and consigns to a commission firm. Of course he is constantly consigning the commission man to a place warmer than his hottest greenhouse; but that is his privilege and the commission man gets accustomed to it so no one is much hurt. The market is cut out for him. The rose grower has the great trilogy of Beauty, Bride and Maid; the carnation grower has a little more vexed problem as to the varieties he will grow, but it is plain sailing for the violet grower. The various committees of the leading trade societies settle many a problem for the carnation and chrysanthemum grower; but they like to nibble at the new things so as not to be caught napping. This gives them a chance to grumble once in a while, but it makes life interesting for them. There is always something new coming up in roses, too, to vex the grower. If the man who gets hold of the new one first has a reputation and can succeed in growing it well, it is an easy matter for him to get a market for the plants and so turn an honest penny. But business instinct counts just as heavily in growing cut flowers as in the other business ends of horticulture. It was business instinct which years ago influenced one of our leading growers of roses to discard every flower which did not come up to his standard. That policy made his reputation and was the foundation of his success. It worked both ways, it concentrated his efforts on producing something up to that standard and maintaining it, while it made his reputation. It did more; it elevated the stand-

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ard and really made two classes of growers in all lines of cut-flower growing, the one which aims at "fancy" flowers and which embraces all the high class establishments, the other which does the best it can and takes things as they come. I have been among growers of violets and have seen flowers discarded for slight imperfections of color which the unobservant eye would scarcely detect. I have seen roses discarded which a few years ago would have been sent to the market for what they would bring. A walk through the wholesale districts in any of the large cities will reveal to the observer stocks of roses, carnations, violets etc. which seem to be different varieties, although the same, the difference being in the growing mainly, but also in the care with which the cutting, keeping and picking are done. It is one of the most pleasant branches of horticulture and one of the most remunerative for the capital invested. It has developed fastest of all during recent years and although the constant cry goes up that it does not pay, it continues to develop. The demand for flowers is constantly growing and the laws of demand and supply are inexorable. The daily press devotes more attention to it than to any other branch and this has a great deal to do with its development. That advertisement acts also as a corrective inasmuch as it attracts to the trade people with capital seeking investment where there is certain profit. No one flower has been "boomed" more in recent years in the daily press than the violet. The ease with which it can be grown and the attractive profits resulting from its culture have been alluringly set forth by writers in the daily press, who never grew a violet and knew nothing about the subject. The result has been that many people, particularly women with a penchant for flower growing and a desire to earn "pin money," have gone into the business by the hundreds. Their usual method — following the directions of the daily newspaper horticultural teacher — is to procure sashes and a few hundred plants. The certain result is failure for they cannot compete with the professional grower who is well equipped with knowledge and has an establishment suited for the purpose. The almost unvarying result is failure for these enthusiastic tyros; but they are a disturbing element to the trade. They produce some flowers of a low grade which come in at a time when the crop is most plentiful. They also disturb the equanimity of the professional

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grower by their eager appeals for advice. They disturb the seedsman and general florist in the same way, but they do not disturb the equanimity of the daily newspaper, for that institution and the young man or young woman who wrote the articles which were the cause of all the turmoil are too busy following up the political fortunes of rival politicians, interviewing actresses and society leaders, dilating on the fluctuations of copper or "nipper" stock, exploiting the careers of aspiring pugilists, revelling in the mire of the latest scandal, picturing the horrors of the freshest murder, reporting horse shows and horse races, thrilling the dear public with prognostications of impending wars, and so the florist is left to reap the troubled aftermath, while the newspaper goes to fresher fields.

The business end of horticulture represented by the shopkeeper in the large cities is a branch unto itself. Its connection with the producing branches is a very slender one and seems to be growing more attenuated. Why this should be does not appear on the surface to most of us. The fact remains, however, that as a class they hold aloof from the trade organizations when it would seem that their interests would be conserved by affiliating with them. The combination of all branches of trade horticulturists in one organization should inure to the benefit of all. The smaller cities are generally represented in the shopkeeping by the man who is himself a grower and whose wife or daughters "tend store" and make up floral designs. The great shopkeepers in the large cities are "artists" and indulge in fads. They in some cases drop their first names like the ladies' tailors and milliners.

The development of that branch has been wonderful; glass delivery wagons with gold mounted harness and something suspiciously like a crest embossed thereon have become the sign manual of the successful floral artist in the large cities. The addition of "ribbons and laces to set off the faces" of pretty flowers seems a natural accompaniment to the style of business, but it seems inconsistent with the prevailing "natural" style of flower arrangement. It is positively painful to see flowering plants swathed in ribbons and paper or tied up with bow knots like a poodle dog, and it is to be hoped the "artists" will abandon it or their patrons get tired of it very soon.

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In horticulture as in everything else, the men who originate either methods or varieties are the men who shape the business, ends and all. The men who hybridize, the men who investigate, the men who do the thinking, are the men who supply the motive power for the whole. The originators of the new varieties of fruits, flowers and vegetables have not only conferred a benefit on the public at large but have made it possible for the grower to continue in a profitable business. The man who first propagated roses in summer and began a special business of mailing them showed the way to dozens of successful imitators. The man who developed the idea of the shallow bench and annual planting of roses for cut flowers was in his way a Columbus. The man who first used large glass and light frames in greenhouses made it possible to produce the quality of flowers in evidence today. The men who built big greenhouses to grow lettuce, tomatoes, cucumbers etc., made a great forward stride. The men who started the first trade journal made an important innovation. The business ends of horticulture are many and various and I trust enough has been said about them in this paper to show to those who may not have considered the matters covered that they are interesting and important, at least to those engaged in them.

Discussion.

President Hadwen said that he had not the slightest doubt that there is as good an opportunity in horticulture today as there ever was.

John Ward said that men now demand the luxuries of life which they did not have in youth. Early tomatoes used to bring from eight to ten dollars per bushel; strawberries from fifty to seventy-five cents per box. The expenses of marketing are greater today. Taxes have increased so that farmers must move back where land is cheap. It is much easier to get help now. Italian women can be relied on. He sells a large part of his crops at the stores in Newton. Any man who keeps his eyes open will find some things that he can do better than others.

Varnum Frost spoke of the armies of pests that we did not have forty years ago. We grew lettuce then without trouble. We had no Colorado beetle or brown-tail moth. Canker worms

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will exterminate themselves. He said that apples have deteriorated also Hovey's Seedling and Boston Pine strawberries.

Mr. Smith said he could not go away and leave unchallenged a statement in regard to the Agricultural College. He said one could do no better than to direct an inquiry to it. It must not be judged by its weakest graduate.

Mr. Frost said that he could teach anyone present in five minutes how to grow lettuce as well as he can himself. A man born with nature's gifts need not go to Amherst. He learns more from observation than from any other source. All one needs is common sense and a tenacious will.

Hon. Aaron Low said he thought one must be posted on the means of counteracting the influence of injurious insects.

Mr. Frost spoke of a new enemy to melons. The crop has been a failure the last two years. One crop valued at $6,000 was a total failure. Amherst College experts were employed and recommended Bordeaux mixture.

W. W. Rawson said he would give a good deal today if there had been an agricultural college for him to go to. He has a son who went to an agricultural college, first at Amherst, then at Cornell University. If he had half a dozen inclined toward agriculture they would all go.

Kenneth Finlayson asked the lecturer what part electricity is to play in horticulture.

Mr. O'Mara replied that he had not had any experience in that line. Cornell University has instituted experiments but his recollection was that the benefit would hardly pay. He said he thought the average amount of sunlight provided by the Creator is what the plants need. The more sunlight the plant gets the better, but he did not know about electric light.

Mr. Rawson said that he believed that electric light hastens the flowering of plants. If his Easter lilies and lettuce are behind he knows how to forward them, by this means.

The lecturer told of a farmer who could not write his name who had been most successful. The man who has the ability to apply his knowledge will succeed. If he had been able to avail himself of the sources of knowledge he would have made as much money in half the time.

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Everything sent out by the agricultural colleges is not to be taken as perfect.

Market gardening in New England is a safer enterprise than in any other part of the country. Southern market gardeners are not making the money that they do in the north. Transportation eats up all the profits.

It is not good to get too far from the city even if you have to pay more for the land.

Michael Sullivan moved a vote of thanks for the interesting and instructive lecture.

MEETING FOR LECTURE AND DISCUSSION.

SATURDAY, February 8, 1902.

A meeting for Lecture and Discussion was holden today at eleven o'clock, the President, O. B. HADWEN, in the chair.

The following lecture was delivered:

THE METHODS AND RESULTS OF SOIL STERILIZATION.

By PROF. G. E. STONE, Hatch Experiment Station, Amherst.

In general the treatment of diseases in greenhouses demands other methods than those which out-of-door plants are subject to. In the greenhouse the gardener has the conditions largely under his control, whereas he can modify only to a limited extent the conditions out of doors. Many of the troubles with which indoor plants suffer are directly traceable to the conditions to which they have been subject and the gardener must be wholly responsible for them. We are therefore not justified in attributing the cause of such diseases to hard luck and the responsibility must be sought for in the limitations of the gardener's skill and intuitive knowledge. There are some disastrous diseases, however, with which greenhouse plants are affected that cannot be controlled by any amount of skill in handling the crop unless recourse is taken to radical preventive measures. Such is the case where the gardener has to contend with genuine parasites or with pathogenic organisms which will attack a healthy plant just as quickly and disastrously as a weak one. Such diseases are produced by the fungus *Sclerotinia libertiana*, Fckl. which causes the Drop in lettuce and the Timber-rot in cucumbers; the *Rhizoctonia* which

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affects lettuce, cucumbers and many other plants; the *Pythium de Baryanum*, Hesse. which causes Damping-off in many seedlings; and the *Heterodera radicicola*, (Greef) Müll., a nematode worm that is known to affect one hundred and eighty or more species of plants and which is especially disastrous, whenever it occurs in abundance, to greenhouse cucumbers, tomatoes, muskmelons, violets, roses, cyclamens etc. It is for the control of these disastrous organisms that the sterilization method is especially adapted, and which all other methods of treatment, except for nematode worms, fail. It is also applicable to the destruction of weed seeds, and the red spider and aphis in the soil are killed. This method of treatment is not a panacea for all plant diseases and it has not been recommended by us for the control of the Damping-off fungus (*Botrytis*), or the Lettuce Mildew (*Bremia Lactucæ*, Regel.), or for other fungi which freely propagate themselves by spores. The application of chemical substances to the soil for the control of pathogenic organisms is not practicable except in some uncommon cases; neither is the fumigation method of much value, as gases are limited in their power of penetrating soils. In some cases freezing or drying the soil is effectual, but it is not easy to freeze soil in the greenhouse without removing it, and that method is too expensive, for at the present time it is far cheaper to sterilize soil than to renew it. The sterilization method is the most effectual and absolute method that can be applied in the treatment of pathogenic organisms. Where the pest is confined to the soil and does not disseminate by spores through the air it can be completely and absolutely eliminated.

Since the time when man first made use of fire to prepare his food, sterilization has been in vogue. It was, however, the brilliant researches of Pasteur and Tyndall that annihilated the theory of spontaneous generation and gave us the correct understanding of the rationale of sterilization, and the intermittent method suggested by the latter has been universally employed by bacteriologists.

Heating the soil for the purpose of ridding it of obnoxious organisms has been tested in a limited way for some years and pathologists have frequently made use of pots of sterilized soil where certain experiments demanded such treatment. Among the

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first attempts to sterilize soil on a large scale in this country was one in connection with nematode worms on roses, cucumbers etc. This method was practiced in 1895 or 1896 by some florists who were so troubled with nematode worms that a successful attempt was made to treat the soil on a large scale with steam.

The treatment of soil by heat, or sterilization as it is called, has been carried on at the Hatch Experiment Station, Amherst, for some years in connection with troublesome organisms which thrive in the soil and prevent the production of healthy crops. It should be borne in mind, however, that when we speak of sterilization of the soil we do not mean absolute sterilization, but what we actually accomplish is a sort of Pasteurization or partial sterilization; in other words, our soil is sterilized so far as the presence of some obnoxious organism is concerned. Cultures of soil treated with steam which attained a temperature of 212° F. would show a considerable bacterial flora, and the subsequent and continual exposure of the soil to the air and the application of water will enable the soil to become subsequently supplied with a host of organisms which are beneficial, indifferent or otherwise. In order to obtain absolute sterilization and maintain those conditions we would have to make use of the methods employed by bacteriologists. Absolute sterilization we do not desire; and all that it is necessary to accomplish is to destroy the obnoxious pests which cause damage to the crop. A uniform temperature of 180° F. maintained for a short time would accomplish this, but in practice it is far better to exceed this temperature in order to be on the safe side.

During the past year quite remarkable strides have been made in the practice of sterilizing soils. We will now consider some of the methods and results of sterilization. On account of the extensive use of the sterilization method upon a large plan by the most efficient and practical market gardeners the process has been made very much cheaper and quickened to a considerable degree. There have been numerous methods and appliances devised that are great improvements over old ones. In the past year the amount of soil sterilized can be more intelligently estimated in acres rather than in square feet. At the present time whole ranges of greenhouses are being treated and the method has been employed out of doors to some extent.

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We have been able to test a great many sterilizing appliances and have looked into the efficacy and practical utility underlying the various methods which have been in vogue. The method of treating the soil by steam to a distance of a foot or more in depth has always appeared to us as the best one to be employed, and, since the cost of such treatment has been greatly reduced of late there appears to be no longer any reason why it cannot be extensively used. The practice of applying one or two inches of treated soil to the top of the bed, while giving good results, has its drawbacks because the process has to be repeated, in order to be of any value, every time a crop is planted. The cost of treating one foot or more of soil in badly infested houses proves an excellent financial investment: for example, some houses have had the Drop in them to such an extent that fifty per cent of the plants would succumb and in some cases nearly the whole crop has been destroyed. In our own experimental house which was purposely contaminated with Drop a few years ago we have experienced a loss in some cases equal to about ninty-nine per cent. In a house containing four thousand dozen plants at fifty cents per dozen the value of the crop would be $2,000, or at twenty-five cents per dozen $1,000. The loss of fifty per cent would reduce the value of the crop to $1,000 or $500 respectively. Such a loss is the more provoking inasmuch as the maximum amount of Drop occurs about the time when the plants are mature and all the labor bestowed on the crop in transplanting, care given to the same, amount of heat utilized, and the valuable space which they have taken up is all for nothing. A house of this description was sterilized during the past winter at a cost of $100, and in examining this crop (which was one of the most perfect I have ever seen) there was only one case of disease in the whole house. This one diseased plant occurred near an iron post that supported the house and there was evidently a small portion of the soil there which had not been sufficiently treated. The cost of treating this small neglected area, however, would be very insignificant. When we observed the crop it had already been mature for nearly two weeks and was being held back for a better market which gave an excellent opportunity for any further Drop to develop if it were present. There appears to be no reason why, if a house is once treated in a manner as thoroughly as this house was, that another treatment

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would not be required for some years, provided care is taken to prevent recontamination from refuse material which contains the Drop fungus. Even allowing a few contaminating areas to exist in the soil as a result of imperfect treatment it will probably be five years before the loss would again reach that amount where it would be necessary to treat the soil. It requires no argument to show that the expense of $100 for treatment in a house that would be worth $2,000 at fifty cents per dozen or even $1,000 at twenty-five cents per dozen is a good investment, even if the treatment has to be repeated each year; but on the basis of a five-year treatment which is in our estimation all that is required the investment is nearly five times as good. The increased value of the soil and the possibility of having less weeds and fewer aphis should also be taken into consideration in estimating the benefits derived from the use of this method. One experiment of this kind is sufficient to convince the most conservative market gardener of the practicability of sterilization.

The methods employed for heating the soil have been either by the use of hot water or steam with considerable variation in the mode of applying the latter. Messrs. Hittinger Bros. of Belmont have made extensive use of the hot water method and their later constructed houses have special facilities for applying this in the most economic manner. The hot water method requires the treatment of the soil previous to the putting in of each crop as only a few inches of the surface soil are sufficiently heated by this method to kill the mycelium of the Drop fungus.

The heating by steam is now done largely by the aid of perforated pipes and in some cases use is made of two-inch porous tile, although this method is not so practicable. If finely perforated tile could be obtained in the market at a reasonable cost their use would be of much more value for this purpose than at present. The various contrivances made out of perforated pipe varying from one inch to three inches in diameter and usually placed from seven to twelve inches apart are made up into frames from ten to twenty feet or more in length and into any desired width. The size and number of the perforations vary much in different appliances. Where they are rather large (one-fourth inch) they are frequently covered with burlap. In some appliances the perforations are one-fourth inch in diameter and are only one and one-half inches apart

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each way; in others the perforations may be only one-eighth inch in diameter and from three to six inches apart with two or three rows of such holes extending along the pipe. Some of these appliances are not made up into permanent frames but are in sections easily put together or taken apart and are so constructed that they can be readily extended to any length or width desired. These forms are provided with headers placed transversely which are pipes of larger diameter containing perforations, and nipples are inserted at intervals which readily fit into the extension pipes. In some instances the headers are placed at each end, thus forming with the extension pipes a frame composed of a series of rectangles. In this form a complete circulation of steam can take place through the apparatus. In others the headers are in the middle and the extension pipes lead off into opposite directions. In the latter case the ends of the extension pipes are plugged with wood and no circulation of steam takes place. A form of sterilizer recently devised and advertised by Mr. G. M. D. Sargent of Belmont is built after the manner of a harrow. It consists of an iron frame eight feet long by four feet wide with twenty perforated hollow iron tubes corresponding to the teeth of a harrow which are thrust into the soil. The material most frequently used in these various forms of apparatus is iron pipe. The apparatus used and devised by Mr. Cartter is constructed out of perforated galvanized-iron tubes and is very light and easy to handle.

The methods generally adopted by lettuce growers in heating their soil is to place the sterilizer on the surface of the bed. If the bed is twenty feet wide then it would be most convenient to have the sterilizer ten feet wide and twenty or thirty feet long. This is placed midway in the bed and the soil to the depth of one foot or more is dug up on either side and thrown on top of the sterilizer. The steam is then turned on and the soil heated. After sufficient steaming has taken place the pipes can be pulled out and made ready for the next treatment. The soil previously treated is covered up with old canvass and allowed to stand some hours, after which the top portion is shoveled back to where it was taken from. Not only is the one foot or fifteen inches of top soil heated by this method, but the soil underneath the apparatus is equally well sterilized, providing too much haste is not made in removing the

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treated soil. In one case that was examined where the steam was left on late in the afternoon for one and one-half hours and the top foot of soil not disturbed until the next morning we obtained the following records of soil temperature at noon on the succeeding day, or nineteen hours after the steam was applied, and five hours after the top soil and apparatus had been removed. The temperature of the soil two feet below the surface was 120° F. and one foot below the surface was 175° F. In this instance two masses of top soil were heated, the last one being left undisturbed over night. The average pressure of steam was only thirteen pounds and it always astonishes those who heat soil for the first time to find that steam can penetrate such a distance below the surface in so brief a period.

Cost of Sterilizing Soils.

In proportion as the appliances have been improved for sterilizing soil the cost of application has been greatly reduced. From reliable estimates which we have been able to obtain from practical lettuce growers and others who have heated their soil, the cost including coal, labor etc., but not the cost of tile or apparatus used, is as follows:—

In a house two hundred and twenty-five feet long by twenty feet wide, one-third of which was treated at a time by steam passing through two-inch tile placed eight inches below the surface and one foot apart and forming a continuous circuit, the cost was at the rate of sixteen dollars for one thousand cubic feet, where a pressure of steam was used varying from thirty to eighty pounds. The heating was continued day and night as this could be readily done on account of a night foreman being employed. The estimated cost of removing the soil from a similar house to a depth of one foot and placing in new soil without carting the same was at the rate of thirty-seven dollars and fifty cents per one thousand cubic feet. This house had been previously sterilized, but with less favorable results, by the same method except that the tiles were placed eighteen inches apart instead of one foot.

Another house forty by three hundred feet was treated by a lettuce grower with an average pressure of thirty pounds of steam passed through one-inch iron pipes furnished with a series of perforations six inches apart and three-sixteenths of an inch in diameter. The

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iron pipes were made up into a frame and each pipe was seven inches distant from one another. The estimated cost for sterilizing one thousand cubic feet of soil based upon the treatment of the whole house was $8.33.

A lettuce grower who has a range of eight houses each being about three hundred feet long and thirty-six feet wide has recently treated them all by steam with the aid of a new forty-horse power boiler used exclusively for the purpose of sterilization. The sterilization apparatus consisted of a series of one and one-half inch iron pipes which were ten feet in length and were made up into a frame twenty feet long by about eight feet wide. The apparatus was placed on the surface of the soil and the earth from each side to the depth of one foot was shoveled on to it. The cost of this apparatus was about $20. Mr. C. W. Learned who devised it thinks that he could make a duplicate of it for about $17. In this instance it took three days to treat a house three hundred feet by thirty-six feet and from the estimated cost of labor, fuel etc., the treatment was made at a rate of $5.92 per one thousand cubic feet. The price paid for labor in this instance was one dollar and fifty cents a day.

The sterilizing machine used by Mr. Cartter is made out of two-inch galvanized twenty-ply iron tubing with one-fourth inch holes one inch apart each way. The headers are two or three feet long and are made of the same material and perforated. Galvanized iron nipples are soldered on the sides of the headers six inches apart. The ten-foot length pipes are made to fit over the nipples and also into one another so that any desired length or width of sterilizer can be obtained. This apparatus contains more perforations to the linear foot than any we have seen and for this reason and owing to the diameter of the tubing used it is most effectual as a heater. We observed one test with this sterilizer in which four hundred cubic feet of soil were heated at the rate of $2.00 per one thousand cubic feet. This includes the cost of labor at ten cents per hour, which was required to place the apparatus in position and cover it with soil ready for use, also the amount of fuel burned during treatment, together with the amount of coal it required to bring the same amount of water in the boiler to the same degree of temperature and the steam to the same pressure as before the treatment was started.

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Mr. W. W. Rawson claims that it cost him $50 to sterilize a house three hundred by forty feet which would be at the rate of about $4.16 per one thousand cubic feet. This is undoubtedly a very fair estimate of what it costs to sterilize soil when undertaken on a large plan.

Mr. Sargent maintains that two men can sterilize a house one hundred and sixty by forty-five feet with his apparatus in three days. Assuming that it will take forty-two cents worth of coal to heat one thousand cubic feet of soil together with the labor required in setting up the apparatus it would cost about $1.66 to sterilize one thousand cubic feet. This is assuming that the boiler is already in operation for heating the houses and a fireman is employed to run it. It should be understood that there is no shoveling of the soil required with the use of this sterilizer, hence we should expect a saving of expense. When soil can be sterilized at $2.00 per one thousand cubic feet or even at $5.00 there is no longer any question concerning the practical application of this method in green houses for the extermination of some of its worst enemies which interfere with the production of healthy and profitable crops. Even where the cumbersome tile method is employed, the cost of sterilization is less than one-half what it costs to remove the old soil from a house and supply it with new.

Results of Sterilization.

It is not possible for us to give an adequate estimate in dollars and cents as to the amount of money that has been saved by the practice of sterilization, as we do not know the amount of loss experienced by floriculturists and market gardeners in this State due to infested soils. The value of any method of treatment will not be considered for one year alone but for a period of years in order to obtain an idea of its full significance. As a rule lettuce growers have suffered a loss of from fifteen to fifty per cent from the Drop alone and in some instances even greater losses have taken place. There are, however, other beneficial results derived from the practice of sterilization other than those of ridding the soil of disease producing germs. Some market gardeners have practiced sterilization for three years, not wholly for the sole purpose of ridding the soil of certain disease producing organisms, as that can be accomplished by one treatment when properly done,

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but largely for the purpose of increasing their crops. We have made many experiments with various crops in which the growth of plants in sterilized soil was compared with the growth of the same species of plants in precisely similar earth not sterilized. The effect of sterilization is quite marked in such experiments.

Mr. W. W. Rawson, one of our largest lettuce growers, who has observed the effect of sterilization on his own crops for three or four years declares that he would rather have one inch of sterilized soil on his beds than any fertilizer which he has ever used.

For the purpose of determining on a larger scale than we had heretofore shown the effect heating the soil had upon the acceleration of a crop of lettuce we grew a crop from the seed to maturity in sterilized and unsterilized soil. The results showed a gain of thirty-three per cent in weight in favor of the sterilized plats. Plants grown in sterilized soil are always lighter colored, more tender and it is not a difficult task for an expert to pick out such plants in the market. Neither is it difficult to ascertain from market specimens what temperatures lettuce crops have generally been subject to. In houses where the soil has been treated twice the difference in the color of plants is very marked indeed showing that the prolonged heating of the soil is much more favorable to the growth of the plant than a brief period of heating.

There was two and two-tenths per cent more water in those plants grown in treated soil than in the untreated as well as a corresponding decrease in the unburned residue representing organic matter, ash constituents etc. From the color and texture of the lettuce grown in sterilized soil this might be expected.

A gain of thirty-three per cent in the growth of the crop is in itself worthy of consideration, so much so in fact that as already stated, many gardeners practice sterilization for the production of larger crops. This means that a crop of lettuce when four weeks old is equal to one six weeks old as ordinarily grown, at least such are the results which we have obtained in our experiments, and lettuce growers have related similar experiences. A great many tests have been made by us on various plants all of which show practically the same accelerating effect in growth and development as a result of sterilization. If one can turn out a crop as fully matured in four or four and a half weeks owing to sterilization as he can ordinarily in six and six and a half weeks without steriliza-

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tion then it is evident that there is considerable saving in the method.

There are still opportunities for practical gardeners to improve the appliances for sterilization which will render the operation more efficient and reduce its cost.

Discussion.

W. W. Rawson said he had been very much interested in the lecture. He had consulted Professor Stone, who first brought the subject of sterilization to his notice, many times. He began to practice sterilization about four years ago; he began in a small way with a cartload of sterilized soil. He first spread an inch of sterilized soil on the surface of his beds; later two inches, and he now sterilizes all the soil used. He has sterilized the soil in thirty-four houses and fifteen hundred hotbeds. The subject is yet in its infancy. Sometimes after sterilizing the soil very fine crops will at first result, while the second and third crops will be poor, but this, Mr. Rawson contends, is due to poor management of the crops and not to sterilization. Mr. Rawson uses two-inch perforated pipe, thirty feet long. His men put them in while the steam is getting up. He can use each sterilizer two or three times a day. He considers the time and money well expended. If he had to spend $1,000 a year in sterilizing he would do it, but he thinks it will be necessary only once in three years. He considers sterilization one of the most important subjects in connection with his business. In his floral department he sterilizes all the soil used in pots. He has not compared his crops with those grown in unsterilized soil because he has none.

Professor Stone said that all the experiments he has seen show a wonderful penetrative power in the steam. The soil should be left undisturbed for a number of hours after sterilization and the heat will gradually work down. The greater the pressure of steam the more effective will be the sterilization. He would like a pressure of steam of at least fifty pounds to accomplish good results.

George D. Moore said he had two houses of lettuce, one sterilized and the other unsterilized. The lettuce in the unsterilized soil was the best; that in the sterilized soil grew more rapidly and did not head so well.

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The lecturer said that Mr. Wolfe of Worcester sterilized his house of cucumbers and produced an average of one hundred and fifty-five number one cucumbers to a plant, but it was not all due to sterilization. He has a very fine strain of seed which he produced himself. The foliage has a great deal to do with getting good fruit. You cannot obtain good cucumbers without good foliage; ninety-five per cent of the plant food comes from the air by means of carbon assimilation taking place in the leaves. It is well known that when we heat soil the humus compounds or organic matter is more available. Heating the soil may drive out old gases. It is possible by judicious management to control the plants so that they will not grow too rapidly. Sterilization affects only those disease producing organisms which are in the soil such as Drop, Rhizoctonia, eel worms, and one of the damping off fungi, Pythium, but the common damping off fungus Botrytis which attacks geraniums, cannot be controlled by sterilization. Nematodes or eel worms are closely allied to the worms seen in vinegar and in paste. They do not live out doors in our climate at least through the winter. In the southern states they attack various economic trees and their control in that latitude is a difficult matter. They injure muskmelons much more than cucumbers. It is very difficult to control them there.

Joshua C. Stone asked why it is that one man will have diseases of every kind in his greenhouse, while his neighbor will run his for ten years without disease of any kind.

Professor Stone said that perhaps the man needed sterilizing. Some men can go into a greenhouse and see with an instinctive glance just what it needs. Diseases are communicated by exchange of plants. One grower in Springfield has never had certain diseases because he has never exchanged. We are going to have more of this trouble with plant diseases as soon as our commercial intercourse increases.

Varnum Frost said he thought many troubles might be attributed to continuing crops on the same soil year after year.

A vote of thanks was passed for the interesting and instructive lecture.

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MEETING FOR LECTURE AND DISCUSSION.

SATURDAY, February 15, 1902.

A meeting for Lecture and Discussion was holden today at eleven o'clock, the President, O. B. HADWEN, in the chair.

The following lecture was delivered:

FUNGOUS DISEASES OF FRUITS.

By PROF. M. B. WAITE, Dept. of Agriculture, Washington, D. C.

The diseases of fruits may be divided as to their cause into two great classes, parasitic and non-parasitic. The non-parasitic class includes diseases induced by bad soil, too high temperatures, too low temperatures, too constant temperatures, sour soil, bad drainage or excess of water, resulting in asphyxiation, alkalies, organic acids or other poisonous substances in the soil, poverty, drought, sun-scald, mechanical injuries, and all such causes. It further includes physiological disturbances within the plant itself, as well as the disease called chlorosis, by which the plant fails to take up iron although the soil is abundantly supplied, and diseases of nutrition caused by over feeding; also those of an enzymic nature, by which the plant loses control of its enzymes or vegetable ferments.

Turning now to the parasitic class, there are two main divisions, the animal and the vegetable parasites. Among the animal parasites are Nematodes or eel worms, Phytoptus and other mites, and the great family of insects. The sucking insects, gall producers and scale insects are intimately associated with the plant itself, and are typical disease producers. It is a question whether the work of the larger leaf-eating and feeding insects should be classed as disease, for it is only a step from this to the depredations of birds, mice, rabbits or even cattle.

The vegetable parasites of plants belong almost wholly to the great class of fungi, whose species, both parasitic and saprophytic, probably equal in number all other plants. The mistletoe, a flowering plant, is parasitic on the pear and the apple, producing a disease of these trees. Some algae, or even lichens, may be classed as disease producers, but practically all the vegetable parasites of fruits belong to the fungi or their very close allies, the bacteria. The number of the diseases of plants

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produced by fungi is also very large. It is not rare at all for native plants to have as many as a hundred such diseases. The grape has fifty fungous diseases, and the apple in this country alone has thirty-five at least.

Disease, in its broadest sense, has been defined so as to include every possible unfavorable factor entering into plant life, and the origin of the word *dis-ease* lends some color to this definition. On this basis we should find very few healthy plants, and using this broad definition it would hardly be possible on theoretical grounds, to have a healthy plant. Professor Bailey has aptly stated that every plant has within it the potentiality of developing far beyond what is reached in ordinary cultivation. We know this is true, for as methods of growing plants are perfected, we see specimens under particularly favorable culture, reach still higher and higher development. The classification of diseases above given may seem to include an unnecessary variety of causes, but it is none too broad, for I am certain that within the past season in my orchard work I have seen repeated examples from every one of the causes mentioned. In fact, with a few exceptions, I have seen disease from all these causes in a single day's trip.

The ordinary conception, however, of disease in plant life is somewhat more restricted than above given. Disease may be defined as a condition of the plant by which it is rendered partially incapable of responding to its environment. By environment, is meant conditions of light, temperature, moisture, physical and chemical condition of the soil, in other words, the ordinary atmospheric and soil conditions. The gardener will say that a particular plant is not diseased; it has only met with an accident and will soon recover and grow thriftily again. On the other hand, this choice plant refuses to grow in spite of the most perfect cultivation, pruning, watering and adaptability of soil and climate. It therefore must be sick. This more restricted definition would exclude the ordinary direct effect of unfavorable environment, as well as injuries by feeding insects, birds and animals. It would include all physiological, enzymic and nutrition disturbances within the plant itself, as well as parasites which are intimately associated with the plant tissues, and is, I think, the definition more commonly in the mind of plant cultivators and orchardists.

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The foundation for the study of the fungous diseases of plants was begun by the early mycologists more than a hundred years ago, and the work in systematic mycology during the past century has very greatly aided the study of modern pathology. Even the mere classification and naming of the species of fungi have been necessary for a complete understanding of the subject. This classification and nomenclature and the work of de Bary and his pupils on the life history and biology of the fungi have been the basis for modern pathological work. In fact, the biology of the fungi, taken in connection with the progress in the study of plant physiology, has made plant pathology possible. The mycologist studies fungi for themselves, though they may be parasitic and live on a host plant; yet he regards the fungus as the important thing and the host plant, from his standpoint, is useful only as a support to the fungi. The plant pathologist, however, turns his attention to the higher plant rather than to its parasites, and studies the parasites mainly in their relation to the host plant. Plant pathology is really quite a new science, in fact, scarcely more than twenty-five years old, and the knowledge of the treatment of plant diseases has grown up almost entirely within the past fifteen years. The results of investigations of plant diseases have been so satisfactory that the more these subjects have been studied, the greater has been the demand for still further research. The number of investigators is large and the amount of work now being done on this subject is very great and is rapidly increasing. It is a satisfaction to know that our own country leads the world in this line of investigation. Our universities, State experiment stations, and the United States Department of Agriculture, combined, are doing quite as much work as any other two countries, perhaps as much as all the rest of the world. The Department of Agriculture has just about doubled its corps of investigators of plant diseases within the past year. Not only have investigators been active, but the cultivators of plants, especially the fruit growers, the horticultural press and horticultural associations, have taken up the study of plant pathology energetically.

The word "fungicide," which was only coined in 1886, "Bordeaux mixture," "Monilia" and other technical names of fungi, are now common every-day words to the progressive fruit grower. It was an easy matter a few years ago for a mycologist to lecture to

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an audience like this, for all his common knowledge was new to his hearers. In taking up the study of some of the more important orchard diseases, I will endeavor to give the principal facts concerning them, and especially their treatment, but fear, however, that much of the information which I can impart is already known to you.

* * * * * * * * * *

*Pear leaf blight, caused by the fungus *Entomosporium maculatum*, produces small round spots on the foliage and causes the leaves to drop early in the season. It also produces ugly hard spots on the fruit, frequently causing it to crack open. It is readily preventable by spraying with Bordeaux mixture, about three treatments being necessary on orchard trees. The first should be made as soon as the foliage is well out, about three weeks after the bloom sheds, and the other two at intervals of ten days to two weeks.

The quince spot and leaf blight of the quince is caused by the same fungus and is preventable by the same treatment. However, the first treatment should be slightly earlier in the case of the quince. Pear stocks and quince stocks in the nursery suffer severely from defoliation caused by this fungus. The treatment in this case should be more complete, the first spraying being made as soon as the earliest leaves are expanded, and about six treatments are necessary at intervals of ten days to two weeks.

Apple scab is one of the well-known pests of apple orchards, especially in the North. It is caused by the fungus *Fusicladium*. An allied species produces the pear scab, a similar disease of the pear. These diseases are also readily preventable by spraying with Bordeaux mixture. The treatment, however, should begin early in the season, as soon as the buds have burst from the cluster and exposed the individual flower buds. About three to five treatments are necessary.

The bitter rot of the apple is a very serious pest in Maryland, Virginia to Missouri and southward. While scab is particularly bad toward the North, bitter rot takes its place toward the South. The treatment for bitter rot should be about the same as for apple

*The portion of the lecture which follows was given from a large number of lantern slides thrown on the screen. As the pictures cannot be reproduced, only an abstract is given.

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scab, but the results of spraying have not always been satisfactory. In the mountains of Virginia, both bitter rot and apple scab occur, the latter attacking the Winesaps, while the former attacks the York Imperial and Newtown pippin.

Canker is the term applied to several diseases which attack the bark of apple, pear and other fruit trees. This type of disease can usually be prevented by spraying with Bordeaux mixture. Where it has already appeared on the trees, it should be cut out as much as possible, the wounds, where large, coated with paint or liquid grafting wax, and then the trees thoroughly sprayed in early spring until they are blue with rather thick Bordeaux mixture.

The fly-speck and smut fungi, which cause such a bad appearance of the apples in the Tidewater region of the Atlantic Coast, especially in the Middle States, are very easily preventable by treating with Bordeaux mixture. The treatment outlined for apple scab and bitter rot is very efficacious.

The black rot of the grape still maintains its position as the most serious pest of this fruit over a large portion of the country. The destruction wrought by it in the Niagara vineyards of North Carolina this last season was almost complete, and the Delawares were seriously injured in spite of more or less spraying. No diseases, however, have been more thoroughly demonstrated to be susceptible to treatment than the black rot and mildew of the grape, although we regret to say that the annual losses from these diseases still continue to be large. The first treatment should be made with Bordeaux mixture just as the buds are swelling. The second treatment may be made when the grapes are in bud, a third just after the fruit has set, and the fourth and fifth at intervals of ten days to two weeks. If spraying is deemed necessary after the fruit is from two-thirds to three-fourths grown, the ammoniacal solution of copper carbonate should be used instead of the Bordeaux mixture to avoid discoloration of the ripe fruit.

Pear blight is one of the most destructive pests of pomaceous fruits. It is caused by the microbe *Bacillus amylovorus*, one of the bacteria. This germ works in the blossoms, young fruits and fleshy bark, killing these tender succulent tissues and resulting frequently in the death of the entire tree. The disease enters the tree normally through the nectary of the blossom, and is carried from flower to flower and from tree to tree by bees and other insects

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which are visiting the flowers for their nectar. It also enters the tree through the tender tips of young shoots, but even here insect punctures and insect distribution is probably necessary. The tree resists the inroads of the blight quite strongly, and in a majority of cases successfully, the resistance depending on a number of different factors. In the majority of cases of infection of pear blight, the blight dies out completely during summer time. In a few cases, however, the disease gets into the fleshy bark of the limbs or body and remains alive over winter. These cases, which I call hold-over blight, start the infection on the blossoms the next spring. The remedy for pear blight consists especially in cutting out the hold-over blight in the fall of the year. The work should be done very thoroughly and carefully, cutting from six inches to a foot below the lowest discoloration. The trees should then be examined very carefully the next spring just before the blossoms open to be sure that no cases have escaped attention. Cutting out during spring or summer when the foliage is on is beneficial always, but may not necessarily be effective in eradicating the pest. About two to three weeks after the blooms have shed, is an important time to inspect the pear orchard for blossom blight, and the prompt removal of a few cases at this time may be very beneficial. In cutting out blight always carry a sponge or piece of cloth and a solution of corrosive sublimate one part to two thousand. Wash over each wound with this solution and wash the knife or saw frequently with it.

Peach yellows is one of the most serious diseases of the peach and has utterly eluded all efforts by scientific men to find out its cause. There are many things, however, known about the yellows which are important to the orchardist. The disease is a communicable one, spreading rapidly from tree to tree and from orchard to orchard. The method of communication is not known, but it may be artificially communicated by budding from diseased trees. As no such process normally takes place in the orchard, there must be some other way by which the disease is transmitted. The disease behaves like a contagious parasitic malady, but no germ or microbe has ever been found. Strange to say, the disease can be prevented as thoroughly and satisfactorily as any known plant disease, although the common opinion of horticulturists is to the contrary. By promptly removing trees at the very first ap-

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pearance of symptoms of the disease, it is possible to keep it entirely in control in an orchard or in a region. The first symptom of the yellows consists of the spotting and premature ripening of the fruits. These premature peaches are very striking in appearance and very easily detected, and should always be considered a cause for the prompt removal of the tree. Later the tree assumes a yellow cast of foliage and bushy, wiry, yellow sprouts are produced, and, if the tree is not dug up, it dies after three to five years. There is a great demand in the localities where this disease is prevalent for some one to find out the cause of the yellows, and yet it is very doubtful if any better treatment could be found than the eradication method now very well known. The difficulty with this, however, is to get people to put it into execution.

The rosette is a very similar disease to the yellows but is restricted to the South so far as is known, it being limited mainly to the State of Georgia. This disease is very much quicker in its action than the yellows. The first symptoms appear in the spring, and frequently the trees are dead by August and never survive the year.

The little peach disease is a comparatively local disease in Michigan and New York State, but is very severe in a few localities. The main symptoms of little peach are the reduced size of the fruit, the belating of the fruit, the yellow color of the foliage without apparent cause, the diminution of twig growth, and finally the gradual death of the tree, limb by limb. Careful investigation of this disease has shown it to be distinct from the yellows and rosette. It is thought to be due to a root parasite, a minute fungus growing on the feeding roots.

The Monilia fungus, causing the rot of peaches, plums and other fruits, is one of the worst pests of the stone fruits. This fungus is greatly favored by wet weather and does an enormous amount of damage in the Atlantic Coast States from New England to Florida. The past season it was particularly destructive from Maryland southward to Georgia. By far the larger part of the early peach crop of Georgia was destroyed by it, and in some orchards in Virginia the entire crop was taken, both early and late. It largely disappears when long periods of drought occur at the ripening time. Persistent efforts have been made by a large number of investiga-

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tors for the past five or six years to treat this disease by spraying. Various fungicides have been employed, and different times and numbers of treatments have been used. The results, we regret to say, have not been satisfactory. There seems to be but little trouble in preventing the Monilia, at least greatly reducing it in an average season, although in a very wet season this part of the program cannot always be fully carried out. The main difficulty comes from the injury to the peach trees by spraying. Bordeaux mixture sprayed on apples, pears, quinces, and also on potatoes and many other plants has a distinctly beneficial effect on the plant aside from its fungicidal value. It increases the amount of chlorophyll, making the leaves darker green, and enables them to stand more drought and heat. They persist longer on the plant and do more work. In case of the potato at least, they assimilate more starch. There are probably minute amounts of copper salts absorbed into the leaves, producing this beneficial or tonic effect. On the other hand, the peach and the Japanese plum, as well as the violet, bean and some other plants, are injured by the copper spray. These plants probably absorb a large amount of the dissolved copper salts in their foliage. At any rate, their tissues either contain some substance on which the copper acts injuriously or are so constructed as not to withstand its toxic effects. The injuries to the peach by Bordeaux spraying are of two main types: first, the shot-hole and corrosive effect on the young leaves; second, the defoliating effect. The shot-hole and corrosive effect is first noticed and occurs shortly after spraying but does not increase to any extent after the spraying has ceased. The defoliating effect may not begin until two or three weeks after spraying and then gradually increases until the entire trees are bare, resulting in poorly colored, insipid fruit or, in some cases, in its being dropped from the tree. There will be many experiments tried on this disease during the coming season, including some by the Department of Agriculture, in the hope of getting a treatment that will not only kill the fungus but will not injure the foliage.

As far as we know at present, Bordeaux mixture can only be applied to the peach with safety before the leaves are out in the spring. After the foliage is out this spray should be used with caution. If peach foliage is sprayed at all with Bordeaux mixture,

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instead of the standard formula of six pounds of blue-stone to four pounds of lime, a dilute formula should be used containing an excess of lime, namely, three pounds of blue-stone and nine pounds of lime to fifty gallons of water. Copper acetate and the ammoniacal solution of copper carbonate have both proved very severe defoliators in my experiments. We shall try several other fungicides this year, including sulphur compounds, in the hope that one can be secured which will prevent the Monilia without injuring the foliage.

The peach-leaf curl is one of the few fungous diseases of the peach that is easily preventable by spraying, for the reason that the spraying in this case is done just as the buds are swelling. Ordinary standard Bordeaux mixture should be used for the purpose.

Strawberry leaf blight is a very troublesome disease with many growers, although efforts to prevent it have been very successful by the selection of resistant varieties, thorough cultivation and renewal of the beds. However, it can be prevented by spraying, if it is so desired.

For direct spraying on the plants there is no fungicide at all comparable to Bordeaux mixture in the great majority of cases. For certain purposes, as for instance, the later sprayings of grapes and other fruits, the ammoniacal solution of copper carbonate can be substituted for it, but it never quite equals the Bordeaux in efficiency. For some fungi, notably the surface mildews, a solution of potassium sulphide, or liver of sulphur, seems to be more efficacious. Bordeaux mixture represents the highest type of a fungicide, not so much from its killing power on the fungi as for its harmlessness to the host plant. It is not equal as a disinfectant or germicide to copper sulphate or any of the soluble copper salts, to chloride of lime, formaline, corrosive sublimate, or such poisons. There is a great deal of very bad Bordeaux used in spraying, and it is possible to mix the blue-stone and lime in such a manner as to make vast differences in the mixture. The correct Bordeaux mixture should be sky-blue in color, of a very fine grain, and should settle very slowly. The copper must be completely neutralized by the lime. To make good Bordeaux, it is usually best to prepare stock solutions of both the lime and the copper sulphate, containing one pound to a gallon of water in each case. To make, for instance, fifty gallons of Bordeaux, dilute the

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lime with twenty-five gallons of water and the blue-stone with an equal amount, and pour these quickly into a third vessel, stirring rapidly. The quality of the lime is very important. A good grade of stone lime should be used which will slack up evenly into a fine paste, and will dilute into a smooth, creamy mixture. For the purpose of more readily mixing the lime and blue-stone solutions, I have devised several arrangements by which the two can be diluted in barrels or tubs and then run by gravity through a rubber hose into the receptacle. Standard Bordeaux mixture should contain six pounds of blue-stone and four pounds of lime to fifty gallons of water, and is known as the 6-4-50 formula. Strong Bordeaux may be made with half the amount of water for spraying in winter time on dormant trees. For spraying peach foliage, dilute Bordeaux containing three pounds of blue-stone, nine pounds of lime and fifty gallons of water is to be preferred. This will be known as the 3-9-50 formula.

MEETING FOR LECTURE AND DISCUSSION.

SATURDAY, March 8, 1902.

A meeting for Lecture and Discussion was holden today at eleven o'clock, the President, O. B. HADWEN, in the chair.

The following lecture was delivered:

THE INFLUENCE OF AMERICAN EXPOSITIONS ON THE OUT-DOOR ARTS.

By WARREN H. MANNING, Boston.

Ostensibly World's Fairs are promoted to enable all countries and states to display to many people their natural advantages and resources in such a manner that colonists and capitalists will be induced to develop them, to enable manufacturers and other producers to extend trade by showing their products, to display works of art and the results of sociological, philanthropic, and religious efforts, and to bring together in conference the representatives of all such activities for an exchange of ideas and mutual acquaintance. Really World's Fairs are promoted to "boom" a city and to induce our national and other governments to put money into the coffers of local merchants. Local sub-

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scriptions are invariably solicited on the ground that the fair will draw a certain number of visitors, each one of whom will leave a specified sum of money of which each local contributor must surely gain some part. Each exposition is followed by a local contention as to whether the city was or was not benefited, on the whole, by the undertaking. Presumably the division of opinion lies between those who did and those who did not receive what they regarded as a fair share of the governmental and individual contributions to the city's welfare, with a sprinkling on the one side of those of the real workers to whom the honors they received were not enough to offset their labors, and on the other side of those whose vanities were pleasantly tickled. In any event it is safe to say that no city once having gone through the throes of a World's Fair will attempt another in this generation, even if it were possible to again induce a paternal government to lay a few million dollar eggs in the exposition nest.

It is of course difficult to trace the direct results of an exposition. A city probably receives directly from the exposition more money than it actually expends, but indirectly the loss is probably much greater than the gain. Many of the "boomers" of the fair have little to lose and much to gain. The substantial and far-seeing citizens are compelled to contribute time and money from a feeling of loyalty to their city. They know that without such contributions the fair would be a failure. Many of them know, too, that the same amount of money and energy expended upon the improvement of the city, the improvement of the condition of the people and the development of its industries and resources would result in an infinitely greater permanent gain. They know that much local capital will, in view of the fair, be tied up in undertakings from which no return can be hoped for a long time after the fair closes, and, furthermore, that the exposition will lead capitalists to invest money in other localities that otherwise would be invested at home.

This, of course, is the selfish point of view, but it is, we believe, the point of view that will result in defeating, after the St. Louis Exposition, any further attempts at a great World's Fair for a long time, unless it may be at the national Capital, directly under the auspices of the United States government with periods of special interest and special transportation facilities

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and rates to draw citizens from all parts of our own and foreign countries. At Washington there is and always will be the best representation of the country's resources arranged in the most instructive manner. It is likely that there will continue to be local expositions in which local resources will be effectively displayed. If they could be in a sense outposts of a great permanent exposition at Washington which could establish traveling exhibits for their benefit, they would be of far more permanent value than the theatrical outbursts of local pride represented by the quarter century exposition period that is passing by. However much or little cities may be advancing their own interests by holding expositions, I think there can be no question as to their value in promoting the welfare of the nation as a whole as long as they are given a distinct educational value and can draw large numbers of visitors to profit by the lessons they teach. If it were not so there would be no justification of national appropriations.

It is of course difficult to trace or measure with definiteness the results of a World's Fair. Every one of the millions of visitors to our great expositions must, however, have been quickened intellectually by what they saw and morally, too, if they kept away from the midways. Surely the Court of Honor at the Chicago Exposition was a dream of beauty that could not fail to lift all thoughts and aspirations to a higher plane. Many people needed such an incentive to draw them from their homes and give them the broader outlook that travel alone can impart.

The bringing together of widely separated men and women representing all the activities of a nation, or of the world, in organized conferences or even in accidental meetings will do more to promote these activities than will a large amount of correspondence and reading. An enthusiastic individual can by his presence and personal appeal make for his cause life-long workers of individuals who could only be mildly interested by written appeals.

A state's exhibit of its resources may induce a single individual to establish industries that will yield a return many times in excess of the cost of the exhibit. The same result may grow out of a manufacturer's exhibit, or from a new idea gained by a mechanic. Surely the influence of a comprehensive fine art exhibit upon all people, and especially upon the thousands who

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have never seen real objects of art will alone justify large expenditure of time and money.

One of the most important results of the exposition as far as they relate to the material and æsthetic welfare of our nation as a whole is the advancement of the outdoor arts as represented by landscape design, architecture, sculpture, the closely allied industries of floriculture, horticulture etc., and the closer personal and professional relations that have grown out of the design and execution of the plans for these world's fairs.

Well organized, united action of this character began at the World's Columbian Exposition, at Chicago in 1893. We must not overlook, however, the Centennial at Philadelphia in 1876 and its very marked influence upon the outdoor arts. Here the design of buildings and grounds was governed very largely by the engineer. The architectural profession did not then have the influence which it has now and landscape design was represented by only a few able men whose public work had been confined almost wholly to public parks, the design of which had not at that time developed sufficiently in beauty for people to realize that the profession would eventually stand at the head of the arts of design.

The so-called Queen Anne style of architecture, the general use of hardy rhododendrons, and the introduction of bedding-out designs in tender plants were direct outgrowths of this exposition. The introduction of rhododendrons was of real permanent value. The use of bedding-out plants developed into a craze almost as bad as the tulip mania of the Dutch, and its more ardent devotees devised such astonishingly curious and ludicrous conceits that discredit was cast upon such a use of plants. This, coupled with the excessive cost and the comparatively short period of perfection, is resulting in the gradual abandonment of the bad as well as the good features of bedding-out. The less said about the Queen Anne house, the better; it was a bad case of architectural jim-jams from which the ready-made plan architects have not yet recovered. The good architect of today simply gasps and says nothing when this period is mentioned in his hearing.

The Chicago World's Fair grew out of a sympathetic, harmonious and united effort on the part of the ablest men of the outdoor art professions to secure perfectly proportioned groups of buildings with suitable landscape environment and perfection

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in detail. No other exposition in this generation has come or will come as close to the highest ideal as this, because so many men of equal ability cannot be induced to give their time and best thoughts so unreservedly to such a problem again.

The influence of the Chicago Exposition upon the men engaged in the outdoor arts was positive and direct. That it was a profound inspiration to architects to do better work was made evident almost immediately in a better class of business, residential and public buildings. It gave as nothing else had done, to professional men and the people at large a clear conception of the profession of landscape architecture as a fine art, for it was generally known that the site was adopted on Mr. Fredk. Law Olmsted's advice, that he outlined the general plan in his report, and was one of the conferees that placed the first draft of the plan upon paper, and that all landscape work was under his direction. The sculptors and mural decorators also opened a broader field of usefulness by their work at Chicago. Since this fair the men and women of the allied fine art professions have been coming closer and closer together in their relations. They are seeking to coöprate with each other more frequently in public and private work. A natural outgrowth of this coöperation is the serious and practical consideration of comprehensive schemes for the promotion of civic beauty that will after a time make America the most beautiful country in the world.

Every important exposition that has followed the World's Fair copied the essential features of its plan. The California midwinter exposition immediately following was not an artistic success taken as a whole and it did serious injury to and left undesirable mementos in a beautiful park. The Omaha Exposition was an artistic success so far as buildings were concerned, but it followed the lines of the Chicago Fair too closely and suffered by comparison. The Atlanta and Nashville Expositions were lacking in the beauty and unity that gave the Chicago and Omaha Exhibitions distinction. Their average of excellence was high enough, however, to have an influence for good upon the whole South, as will be true undoubtedly of the Charleston Exposition. The work at Buffalo was taken up in the same spirit as it was at Chicago by a different group of men. No one can deny the brilliancy and beauty of many portions of the exposition. There

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was not, however, that careful and successful adjustment of proportions that was the hall-mark of great minds acting harmoniously at Chicago. It was, to use a recent expression, designating the work of the architect, the "frozen music" of a remarkably successful vaudeville entertainment, not that of a grand opera. The color scheme, a most difficult problem, was well handled. So also was much of the planting in interior courts and about the bases of important buildings. The use of the upright forms of red cedar and poplar growing out of masses of shrubs at salient angles of buildings was especially appropriate. The use of vines in window and roof boxes also added much to the gaiety and grace of certain architectural features. Away from the buildings the spotty beds in lawns gave the grounds the appearance of having a bad attack of an unpopular malady that since the exposition has come to be wide-spread. The Pan-American Exposition was not alone in this respect. The general effect of the grounds about the buildings of nearly every exposition has been disfigured by beds of really fine material that did not come into harmonious relation with the buildings, or the plan of the grounds, but were mere spots set apart by themselves.

It is too early to determine the influence that the Pan-American Exposition will have upon the outdoor arts. Following the precedent established by the two other great expositions, we should expect an eruption of excessively ornamented and highly colored structures perhaps quite as bad in their way as the poor Queen Anne's nightmares, because few men can hope to design successfully such buildings as were represented at the Pan-American where the whole situation was controlled very largely by the only men who have been eminently successful along these lines. Probably the sober sense of American architects will discourage this movement, especially in the colder sections of the country where this style of architecture would be quite out of place.

A reference has already been made to the spotty planting of considerable sections of almost all World's Fairs' grounds. Primarily, it is due to a defect in the general plan of the expositions whereby no adequate provision was made for such outdoor exhibits. The out-of-the-way back corners of no use for other purposes were assigned to such exhibits. Usually the soil

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and situation were bad, and this, coupled with the shortness of time available, made a successful exhibit of hardy plants an impossibility. Exhibitors could make this injustice so evident that exposition authorities were compelled to grant locations in the open spaces designed solely to give the buildings an harmonious setting. The only really successful exhibits possible were of particularly vigorous plants that would grow well or continue to look well the first year, such as Cannas and Rhododendrons.

Horticultural interests have never been adequately represented at any of our World's Fairs, and even if favorable conditions had been provided the time was too short to prepare and establish exhibits in a satisfactory manner.

The Massachusetts Horticultural Society is large enough, strong enough, and able enough to take a commanding position with reference to all matters that pertain to the interests it represents along the lines of outdoor art work. Now, societies like individuals have periods of repose and during these periods of repose they sometimes have pleasant dreams in which some little incident is so startling and shocking that they wake with a shudder and a scream and for a few hours are so unstrung that they will quarrel with their best friends; but a day's activity dispels all this and in another day the whole incident is forgotten. The Massachusetts Horticultural Society needs a day of activity; it needs to study the movements of the day, the influences growing out of such expositions as have been referred to, and the work of other societies having objects similar to its own — then to study its own work to see if it is gaining or losing power and influence. If it is losing, then the control of its wealth is likely to come into the hands of a few able, shrewd, selfish men who will establish a mutual admiration society with occasional banquets and just enough work to keep other members quiet. If it is gaining it will take up new and living issues that will interest every member and make active workers of a majority and benefit the public at large. It will bring its work before the members in fresh, timely publications issued at frequent intervals; it will encourage such new lines of work as have recently been laid down by the School Gardens and Children's Herbariums Committee; it will discourage the ancient and commonplace in its exhibits by actively encouraging new exhibits and new

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exhibitors; it will encourage more original investigation and less exploitation of old things; it will reach out both hands in good fellowship to other local societies having closely allied objects in view, coöperate with and aid them in their work and at the same time add to the interest of its own exhibits as it has done through its connection with the Boston Mycological Club. It will not compete, even remotely, with the legitimate work of other societies, as it is doing in its exhibits of wild flowers, or duplicate work that comes directly within the field of, and is being done by, another society, as it is in its Forestry Committee.

It will continue to coöperate with other societies in the care, acquirement, and safe-guarding of public reservations, or in the preservation of notable landscape objects as it has with the Forestry Association in connection with the Greylock Reservation. It will continue to extend a welcoming hand to visiting national associations having allied interests as it has to the American Park and Outdoor Art Association.

In closing let me express an opinion that active aggressive work and cordial sympathetic coöperation with others will place the society on a still higher plane than it has been in the past, and bring correspondingly greater results; also that an aggressive and good-tempered discussion of all the problems coming before the society will do it good, and I hope most sincerely that what I have said may help to bring this about.

Discussion.

Benjamin P. Ware said that he should like to inquire whether the lecturer felt that the desire for World's Fairs was at an end, and asked if there were not other ways by which people could acquire love of beautiful homes and home surroundings than through the lessons taught by a great exposition.

Mr. Manning replied that though the public get great good from the expositions, such fairs have proved to be unsuccessful financially, and it is doubtful whether, after the St. Louis fair, any other great city can be induced to undertake another one. A horticultural Society like this could, as regards outdoor arts, exert much the same influence. We could have here an exhibit which would be national in character.

Michael Sullivan thought that at Chicago the horticultural

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feature was the most prominent part of the exposition. He said that Boston had the foundation for one of the finest World's Fairs and suggested that a marine and inland exhibit might surpass all former fairs.

President Hadwen asked if the lecturer could give a few points on matters that are essential to the adornment of rural homes at a small expense.

Mr. Manning answered that one thing of importance was that the lawn space should be taken advantage of; that it should not be broken up by scattered shrubs but framed in rather by a wall of shrubbery. Floral displays should be in flower gardens into which one could step from the house, rather than numerous small beds. Masses of flowers, too, are more effective than dozens of different varieties in smaller quantities. The main object is to make an attractive scene in which no one feature is too conspicuous. The house itself should be connected with the surrounding grounds by planting around the foundations. Uninteresting features should be shut out by shrubbery. There should be a preservation of natural existing conditions, though these are sometimes looked upon by the owners as undesirable. Trees and shrubs already on the land may be better suited to the surroundings than anything else could be, and are often better left standing than removed. Irregularity of surface is often an element of beauty not found in smooth lawns. In planning home grounds one should be largely governed by existing conditions.

In making plans for the house the question of the view should be taken into account and the rooms most used should have the best outlook.

William C. Strong thought our Society had had as great an influence on the public tastes and opinions as a world's fair would give and emphasized especially the strong though quiet influence on the community, through so many years, of our Saturday exhibitions and of the work of the Committee on School Gardens and Children's Herbariums.

On motion of Edwin A. Hall a vote of thanks to the lecturer was unanimously passed.

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MEETING FOR LECTURE AND DISCUSSION.

SATURDAY, March 15, 1902.

A meeting for Lecture and Discussion was holden today at eleven o'clock, the President, O. B. HADWEN, in the chair.

The following lecture was delivered:

THE EVOLUTION OF VEGETABLE CULTURE DURING THE LAST FORTY YEARS.

By WARREN W. RAWSON, Arlington, Mass.

By evolution we mean progressive development, and I doubt if there be any other branch of business in which this progression is more pronounced than in the culture of the various vegetable crops which have been grown for market for the past forty years. This advancement has been made in many ways, namely, the introduction of new varieties, the improvement of old varieties, the greater intelligence in the use of fertilizers to enrich the soil and thus increase the production, the improvement of farm machinery and the methods of cultivation, and the introduction of glass houses for the forcing of crops during the winter months.

Forty years ago the cultivator of the soil had to depend largely on his own exertions and experiments to attain success, but how different today! Agricultural Colleges exist in every State, whose object is to instruct him in the culture of all crops; the amount of literature pertaining to agriculture has increased enormously; and active horticultural and agricultural societies have been formed in nearly every community for the exchange of ideas, thus enabling him to benefit from his neighbor's experience and vice versa. But with all these advantages of today there must be coupled, to ensure success, the same energy and application to work that then existed.

We have learned that it is possible to produce three crops where only one could be obtained heretofore. This has been brought about by more thorough cultivation and the application of such fertilizers as will bring the soil up to the required standard.

Great strides have been taken in agricultural chemistry during the last forty years. Now we can tell by analysis the exact

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amount of the essential elements, namely, nitrogen, potash and phosphoric acid in the soil, and if one or two are deficient for the successful production of the crop they can be supplied. There are special fertilizers prepared composed of a greater or less proportion of the above named elements according as the various crops require, as lettuce fertilizers, cabbage fertilizers, etc.

Stable manure was the fertilizer used then and sold for four to five dollars a cord, but now it can be bought at the stables for one dollar a cord, the reduction in price being caused by the greater use of commercial fertilizers instead of the manure. However, many of the successful market gardeners of today stick to the old way, feeling that it is the surest and best, and use large quantities per acre, perhaps three times the amount used forty years ago. That does not imply that three times the crop is produced, for it is evident that more dressing would be required to produce a crop on old land that had been used for that length of time than it did then. Nevertheless, it is a fact that some of our best and quickest crops are produced on this same land that has been used year after year.

The improvement in machinery has been so great that one man and one horse can do the work that required many, forty years ago; thus the expense of production is greatly diminished.

The climate has so changed during the past four decades that crops which were very successful then out of doors are almost a failure now. Cucumbers and melons may be cited as examples. Then we had spring, summer, autumn and winter, but today the seasons are more or less mixed up and often in the summer season we have weather that will not permit the two crops mentioned to live out of doors and they are therefore grown under glass.

Glass had just begun to be used forty years ago and I remember one man who had five hundred sash and everybody thought it was an enormous amount, but today they are few who have as small a number. After the sash came the glass houses, and these have been enlarged and perfected to such an extent that today the growing of vegetables under glass has become a specialty and crops have attained a perfection unknown forty years ago. Acres are covered with these glass houses heated with steam or hot water and the cultivation of the same has developed into the most important part of market garden business.

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Four crops can be produced in a year, three of lettuce and one of cucumbers. It would be difficult to estimated exactly the cost of production of each cucumber or of each head of lettuce in a house but we can safely say that it is at least one-half that of forty years ago. They do not sell for as much in the market as the supply is greater in proportion to the demand, but more can be sold at a moderate price and a fair profit obtained from the whole crop.

Much of the land cultivated forty years ago is too expensive today to grow crops on and the growers are moving away to a greater distance from market where land is cheaper and taxes less.

It is the same in the market garden business as in many others, in that goods are produced in greater quantity at a less cost of production and sold at a smaller percentage of profit than forty years ago. What some of the market gardeners of today spend for luxuries would have been considered a good profit then. The general mode of living has changed greatly. Now the market gardener has his pair and fine carriage while forty years ago he went to church with one of the farm horses. Now he has two or three weeks vacation in the summer; then he toiled the whole year round. His boys had to work when not at school and now they do as they please. In fact the market gardener of today is classed as an up-to-date business man. He works more with his head than with his hands. He plans the work for others, keeps informed every day of the condition of the market, as to its prices and the supply and demand, knows all about the new seeds and machinery introduced, and in every way endeavors to get the greatest amount possible out of his land.

One of the most vital phases of this evolution of market gardening is the improvement of old and introduction of new varieties of vegetable seeds. Forty years ago most of the market gardeners grew their own seeds or exchanged with their neighbors, that is, one man would grow one kind and exchange his surplus with one of his neighbors who had a surplus of some other variety. There were only two or three seed stores in Boston at that time but today there are three times as many and many of the market gardeners buy large amounts of seed of New York and Philadelphia houses.

The seed business of today is one of enormous detail and is

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brought down to a system that was not dreamed of forty years ago. The seedsman knows what is the very best locality for every crop and sends his stock seed to a grower in that locality whom he knows makes a specialty of that particular variety. For instance, we get our peas and beans from different sections in Northern New York and Canada, our vine seeds from Michigan and several states in the West, our onion seed from California and Connecticut, and our radish and spinach from Germany, where we also get the greater proportion of our flower seeds. By this system better seeds are produced at less prices and the seller, knowing the origin of the stock, can tell what the crop ought to produce under ordinary conditions.

All fertilizers are now required by law to have a correct table of analysis on every package or bag, that is, the different percentages of each element that they contain, so that the buyer can tell just what he is buying. Only by practical experience can he tell what kind and how much of that kind his land needs for the very best results. Only he who has given it the closest study realizes how true it is that different crops require different treatment and different fertilizers for different tracts of land.

Then there are new insects coming up every few years and creating havoc among the market garden crops, and to learn how to successfully cope with these is another chance for study which was unknown forty years ago. If the market gardeners had known as much then about the numerous things I have mentioned as they do now, many of them would be millionaires.

Probably the most interesting phase of the evolution of market gardening during the last forty years is the study of the changes and improvements made in the different kinds and varieties of vegetables. I can remember many of them myself, but having access to some old Boston seed catalogues of that date, I am able to trace them more clearly. I will take them in alphabetical order and speak of some of the principal ones.

Asparagus.—This crop is much the same as it was then but cultivation has improved it very much. Probably Mr. John B. Moore of Concord did as much for the improvement of the asparagus as any grower and we are now growing and selling Moore's Cross Bred in preference to many other varieties. The town of Concord

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is today the principal locality where this very fine vegetable is grown. It can be forced to some extent.

Beans.—More changes have taken place in the bean than in any other vegetable. This is especially true of the dwarf or bush variety. Forty years ago we did not know the wax variety which is the most popular type today. This was introduced about thirty years ago. The Golden Eye Wax is about sixteen years old and was brought out by one of our Boston seedsmen and sold to other seedsmen for stock at ten dollars per peck. Undoubtedly the most popular wax bean today is the Kidney Wax which is catalogued under various names. It is a very tender variety but quite difficult to grow on account of its tendency to spot or rust. This is especially true in a wet season when it is almost impossible to prevent the rust but in a dry season very little will appear.

The Mohawk, Six Weeks, Valentine, Red Cranberry and Dwarf Horticultural are about the same as forty years ago. There are today quite a number of varieties of the Horticultural which sell under various names, one of the most prominent being the Goddard or Boston Favorite. Next to the Kidney Wax the Horticultural Wax and Valentine Wax are the most popular of the wax varieties. The Brockton Pole, introduced in 1884, as well as the Worcester Pole, of more recent introduction, are great favorites as pole varieties. There are a number of varieties of Lima Beans both pole and bush, the old Sieva Lima being the forerunner of this type.

Beets.—I can well remember the introduction of the Dewing's Beet by its originator, Mr. Dewing. The seed was in great demand at that time, which was about thirty years ago. We have had many improvements since then, the most popular ones being the Favorite, Edmands, Detroit Dark Red and the Crosby Egyptian. The last mentioned is the best early and forcing variety and was introduced by Mr. Josiah Crosby about twenty years ago and has held the reputation of being the best early beet ever since. The seed used to sell for two dollars and a half per pound but today the genuine article costs one dollar per pound.

For second early varieties the Favorite and Edmands are selected and the same for late. They are both distinctly blood beets of good shape and not very large. The long beets that we used to see in the markets are seldom seen now. The seed is sown how-

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ever for beet greens as it produces a dark red leaf and is very prolific.

Cabbage.—As to the cabbage there are quite a number of the varieties which were popular forty years ago that are still in demand today, such as Early York, Wakefield, Winnigstadt, Drumhead, Flat Dutch and Savoy. These of course have been greatly improved by culture but they still posses the same characteristics they had then. The most prominent of the newer varieties are the Early Spring, Early Summer, Stone Mason, Drumhead Savoy, All Seasons and Danish Ball Head.

Only the green worm and maggot affect the cabbage but when grown in large quantities the worm does not bother the crop much, and if grown on new land the maggot can be avoided.

I think there is no crop that I have mentioned or shall mention where there has been a greater change in market price than in the cabbage. We used to get ten to fifteen dollars per hundred while today five to six dollars is the top price. There is some profit in them at this price for we grow many more of them and can grow them cheaper but not for one half what we did forty years ago.

Celery.—This crop has grown as much in popularity as any on the list. The varieties have changed greatly, in fact not one of the varieties that were popular then are in use today. There is also a vast difference in the cultivation. We used to grow a branching celery but now the market demands a solid heart. Then the rows were six feet apart and one foot apart in the row, but now three feet apart and six inches in the row are the proper distances. So that now we have to use four times as many roots as formerly but we do not get as much return for every acre of land.

The introduction of the Paris Golden variety made a great revolution in the celery market but not for the benefit of the producer. This is a self blanching variety, grows very readily on new land and is popular for the early market. But when the Giant Pascal and Boston Market varieties appear on the market the Paris Golden sells at a discount. I sincerely believe that if we had never seen the Paris Golden celery we would be better off, for the other would bring enough more to make up the difference.

The celery crop is one that requires a large amount of labor and is not in many cases a very profitable crop but it serves the purpose of keeping the men at work during the fall and winter and to

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occupy the land as a second or third crop and thus help to make business if not profit.

There is not much difference in the cultivation of the late varieties. They are bleached by banking the earth up around the plants. The first banking is accomplished by the help of the celery plow, but the second banking has to be put up with shovels. A greater part of this late celery is put into pits and kept for winter use. When kept till spring it will bring a high price, but as it takes a greater number to make a dozen in late winter or spring there is more profit in selling it in the fall at one dollar per dozen than in spring at two dollars.

Corn.—Great improvements have been made in the varieties of sweet or sugar corn and much larger quantities are raised as compared with the early sixties. Adams' Early and Evergreen were the two principal varieties then. Now we have Early Crosby, Early Cory, Marblehead, Moore's Concord, Potter's Excelsior, Black Mexican, Mammoth Sugar and Stowell's Evergreen. All of these are fine in quality and are grown in different sections in different seasons and are in the market from July 1st till frost comes. As to the cultivation of the sweet corn we employ practically the same methods as were in vogue forty years ago.

Cucumber.—This is one of the best known vine crops and was grown almost wholly out of doors forty years ago and very little under glass while now it is just the opposite. This has been brought about by the change in the climate which renders the outdoor crop very unprofitable as a rule. The cucumber is now grown all the year round in houses made for the purpose and it is generally considered to be one of the most valuable crops for the market gardener.

We have many of the same varieties now that were known then but they have all been greatly improved. The Improved White Spine is the most generally grown and is the best variety for market. The cucumbers are started in a house after a crop of lettuce has been taken out. The vines are trained upon trellises made of slats and wire so that the fruit will hang down and thus be very easily picked. The bees are put into the house when the blossoms appear and in two weeks from that time the first fruit will be picked, that is, in the spring or summer months when the

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temperature will run as high as 100° in the day time and 70° at night.

Forty years ago we used to get as high as fifty cents apiece for cucumbers but not a very large quantity could be sold. Today large amounts are sold for ten to twenty cents each, but the time when they pay the best and when we get the most out of the crop is when they bring from five to fifteen cents. Then we can sell them by the thousand. Many of them are shipped to New York and other large markets and this makes the demand very great. I have known of one market gardener who picked fifty thousand in one day and sold them in our market at four to five cents each. This was in the month of June, 1895. The cucumber crop is a very expensive one to grow as it requires so much care and heat. The coal pen grows lower very fast in cucumber time.

Lettuce.—This crop has been improved and the sale increased as much as any I can name. It is not only grown in the field but also under glass and may well be termed a continuous crop. The headed varieties are called Boston Lettuce all over the country, for the market gardeners of Boston and vicinity have done more than any others to bring these varieties up to their present highly developed type. Many times the quantity is produced today than was grown forty years ago. The varieties are much larger in size: five to six dozen filling a barrel now whereas it would have taken twice as many then.

The plain Hothouse and Crumpled Leaf varieties are grown under glass, and the Black Seed Tennisball, Big Boston, and Salamander out of doors. Lettuce is grown by the acre both in the field and under glass. In the house it will grow best in a cool temperature and a slight frost may not injure it.

Like many others the price of this crop has been greatly reduced and sells for about one half what it did forty years ago, but it is produced at a much less expense and sold in much larger quantities.

Onion.—This is one of the standard or moneyed crops of the market gardener. Years ago the seed only was sown but today those who wish to have another crop on the same land come off earlier, set out a small onion, which was raised the season before and kept through the winter, and thus they can produce a crop about a month earlier than from the seed. In this way a better

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crop of celery for a second crop can be produced. The maggot has troubled the seed crop so much of late years that it is safer to put out the sets. There has been very little change in varieties the past forty years and the Yellow Danvers is still the leading variety as it was then.

Peas.—The varieties grown forty years ago were few compared to the great number now in use. All we have left of that time are the Daniel O'Rourke and Champion of England. Neither of these is very popular now.

I will not go into detail as regards the introduction of our leading varieties of today but will mention only some of the best for the market and for the home garden. The earliest pea is the Clipper, next the Nott's Excelsior, then comes Gradus, the newest or all. This is a fine market variety but does not yield as well as some of the others. McLean's Advancer for eating is the best of them all and is also a very good cropper. American Wonder is a very dwarf variety and for the home garden is one of the best. In quality it is the same as the Nott's Excelsior. The Stratagem is one of the best late varieties.

Of late years peas have not been grown extensively by the market gardeners about Boston as the destructiveness of the pea louse and the cost of picking have rendered them an unprofitable crop.

Radish.—For many years the long scarlet radish was the most popular but of late years the globe shaped variety is in greater demand. They are grown very easily and large quantities can be produced from a small tract of land. Very few of the long radishes are seen in the Boston markets now.

Rhubarb.—This is both an outdoor and a forcing crop. When forced and put into the market in winter and early spring it brings a very good price. When grown under glass it is quite productive. Very little, if any, was forced forty years ago but quite a lot was grown out of doors as we grow it today.

Squash.—The oldest of the present varieties are the Marrow, Hubbard, Crookneck and Scallop. These were all popular forty years ago and are still grown quite extensively today. Many new varieties have been introduced, two of the most prominent being the Essex Hybrid and Bay State, introduced in 1879 and 1886 respectively. They are the same in quality, are large producers and can be used for fall or early winter. The Hubbard for a late

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keeper has held its own though it is not so prolific as some of the other varieties. The old Canada Crookneck is seldom seen in our markets today nor is the old time pumpkin, but there is a small sugar pumpkin, that is grown to some extent.

The method of culture is similar to that of forty years ago but today we have more insects to contend with. The change of climate also makes it difficult to grow squashes today. The past few years they have paid very poorly. When we get a good crop, they bring nothing; when we get a poor crop the price goes up, but it makes no difference what the price is if we have none to sell.

Tomato.—The past forty years have witnessed a great many changes in this crop not only in varieties but in many other respects. The Boston Market was very popular a number of years ago but very few are grown today as there are many earlier and better varieties. The Essex was an old variety and was introduced in 1860, the Essex Hybrid in 1873 and the Early Comrade in 1892. All of these were smooth, round and of a light pink color. The Acme, Paragon, Emery and General Grant are all smooth and of a bright red, as also are the Puritan, Stone, Belmont and Livingstone varieties of a more recent date. The Dwarf Champion is a popular variety on account of its bushy growth, thus enabling close planting for garden purposes.

Many years ago there were quite a number of canning factories located in the vicinity of Boston that put up tomatoes and bought their stock from the growers in this vicinity, but today there are very few of these factories here. They have moved further out and put up their stock near where it is grown for them by the farmers who sell their whole crop by contract. This is an improvement in one way as they get their tomatoes fresher and put them up in their proper season.

There is probably no vegetable grown that has increased as much in consumption as the tomato. It is on the table all the year round and no dinner seems complete without it. Tomatoes grown under glass are selling today for fifty to seventy-five cents per pound. Some are better for this purpose than others. The Lorillard is the best of these. The plants are started in the summer and come into bearing in the fall after the outdoor crop is done and continue to bear throughout the winter.

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I have noted many changes in climate, crops and methods of cultivation but there is one thing in which there has been no change during the last forty years, except that resulting from higher cultivation, and that is the land itself.

There are today acres and acres of uncultivated land at a reasonable distance from market that will produce good crops, perhaps not as quickly as on our higher cultivated lands, but of a higher standard and better keeping qualities.

To these uncultivated lands I advise the young men to go, and, it they have a liking for and a knowledge of the business, they are sure of success. I am speaking from my own personal knowledge of men who have gone into the cultivation of vegetables during the past ten years. Nearly all are making a success of it and they constitute the best class of business men to deal with as you are practically sure of your pay.

They have to employ more capital than forty years ago but as that same capital can now be hired at a much cheaper rate of interest they ought to do as well, if not better, providing they attend to their business and work intelligently. By this I mean that they must learn what crops are best adapted to their land, also the demands of the nearest market, and then devote their whole time to these few crops and grow them in quantity. A market gardener will do better if he be located near a large city at a distance from Boston or New York than if he caters to these two cities alone, for the reason that so much southern truck is now sent to Boston and New York that these markets are often demoralized, whereas as outside market will afford a good trade and a steady price. Thus the market gardener is sure of his market but in order to be successful in the true sense of the word he must have a constant supply on hand and ready to market all the time so as to be able to take advantage of the market when it is at its best.

We are living today in an age of improvement and the vegetable business can well claim a prominent place amongst those industries in which the improvement has been the most marked. I have shown where many changes have taken place in all departments of vegetable culture. New ideas have been introduced whereby the cost of production has been reduced, while the production itself has been increased. The climate has changed thus rendering some crops unprofitable. Labor has been cheapened by

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the introduction of machinery. The introduction of glass has made what may be termed a continuous season. Electric lights are now used to force a crop and are a success. Sterilization of the soil is practiced with a view to destroy all vermin, weeds and everything that is injurious to the crop, and is a great benefit, for now we can grow such crops as lettuce and cucumbers without the fear of their being destroyed by the fungi which heretofore had caused so much damage.

When we consider how great has been this progressive development it is no wonder that we would rather have 1902 with all its blessings and luxuries than 1862 with its hard work and old-fashioned methods. None of our profession have became millionaires but nearly all are well to do. They are very independent, live as well and as long as any other class of business men, and are the leading men in their respective townships. They have more time to themselves and get more good out of life and in all respects are much better off than the market gardeners of forty years ago. I do not know of a single thing that is not an improvement over the old times. Many of us love to look back and think of those old days but none of us would wish them back again. With the opportunities of the present day, I know of no other business whereby one can get greater pleasure than in market gardening providing he takes a sincere interest in it. I do not believe in a man engaging in a business to which he cannot devote his whole heart and soul and to which he is not adapted, but for a man who takes a liking to it, there is no business in the world so fascinating as the cultivation of vegetables for the market.

Discussion.

William C. Strong referred to the lecturer having said that electricity was now successfully employed, and asked him if he would state to what degree it was successful.

The lecturer said that he used the arc light and always had found it beneficial, crops being more luxuriant and maturing more quickly where it was used. He said that he used it up to one o'clock, A. M., the time when the current was turned off. He did not think it would injure the crops to use electric light even longer than that.

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Varnum Frost disagreed with the speaker as to the use of electric light and thought the plants needed some rest. He thought many farmers who did not use electricity had quite as good results as those who did. He said that electricity gave light but not warmth, and that it was high temperature which made plants grow. He suggested that, if electric light *is* so beneficial, there should be remarkably luxuriant grass, shrubs, etc., around our street lights which burn all night. Mr. Frost said that the lecturer had spoken of certain crops which failed. He thought many could remember the time when these crops, fruit especially, did not fail. Forty or fifty years ago pests and blights which trouble us now so much did not exist. He thought, judging from the success farmers formerly had with their crops, that they knew *something* then, and he said that he considered farmers of today less prosperous than those of forty years ago.

Michael Sullivan thought that comparing the farming of forty years ago and that of the present time was like comparing the modes of transportation then and now. He said that if the farmer of forty years ago, with his knowledge, could have had the market we now have, he would have become independent in five years. We have everything to contend with now. A box of strawberries, for instance, can now be had for twenty-five cents at a season when, formerly, we could get twenty-five cents a berry. Cheaper transportation brings all kinds of produce to us continually, making competition much closer. However, there is still a good living to be had from farming, in New England, and young men would do well to take some of the lands now standing idle, put in fertilizers and prepare the land for the crop to be grown; then, if there were good roads, making it easy to get to market, they would succeed.

New England is neglecting the production of apple and pear trees. The injurious insects, etc., which have been spoken of, should not be so great a bugbear. It is quite a simple matter to spray with Bordeaux mixture, which is a remedy for many evils of this sort. One must, of course know when and how to apply the mixture.

The great trouble with market gardening seems to be the market. It is very hard to foresee just what crops to raise. Most farmers overdo some crop. They are very apt to raise some par-

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ticular thing simply because other farmers do and then the market becomes overstocked. They must learn to study conditions and demands.

At the close, it was voted, on the motion of George D. Moore, that the thanks of the Society be presented to the lecturer for his very interesting paper.

MEETING FOR LECTURE AND DISCUSSION.

SATURDAY, March 22, 1902.

A meeting for Lecture and Discussion was holden today at eleven o'clock, the President, O. B. HADWEN, in the chair.

The following lecture was delivered under the auspices of the Massachusetts State Board of Agriculture:

BIRDS AND INSECTS IN THEIR RELATION TO AGRICULTURE.

By E. H. FORBUSH, Ornithologist to the Massachusetts State Board of Agriculture.

The number of species of insects on the globe is vast and that of the individuals is beyond comprehension. It is greater by far than that of all other living creatures combined. More than three hundred thousand species have already been described and there are many thousands of undescribed species in museums. Dr. Lintner, the late distinguished entomologist of the Empire State, considered it not improbable that the number of species would reach one million. Each of these species is enormously productive and it is undoubtedly true that were the progeny of one pair of insects allowed to reproduce without check, it would soon cover the entire habitable earth.

The Rocky mountain locust in its flights filled the air and hid the sun. From the high peaks of the Sierra Nevada it has been seen filling the valleys below and the air above as far as a powerful field glass could bring the insects within focus. The chinch bug covers the corn and grain fields in countless millions over towns, counties and states. The army worm moves at times in solid masses destroying the crops in its path.

The voracity of insects is almost beyond belief. Dr. Lintner says, "A certain flesh feeding larva will consume in twenty-four

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hours two hundred times its original weight." There are vegetable feeders, caterpillars, which during their progress to maturity within thirty days, increase in a size ten thousand times. To reach this remarkable growth a man at his maturity would have to weigh forty tons.

In view of such facts, it will be seen that insects, by reason of their enormous multiplication and great voracity, may become far more dangerous to crops if unchecked than larger and more powerful animals.

It may be truthfully said that this country suffers far more from the depredations of insects than any other. And this is to be expected, in view of the methods employed in agriculture in this country, and the conditions under which it is here conducted.

A considerable proportion of the fertile land in America is still uncultivated and there are vast tracts in which insects can breed unmolested until they exhaust their feeding grounds and overwhelm the surrounding country, as in the case of the migratory locusts. In the settlement and development of a new country man at once begins to disturb the long established relations between living organisms. In a forest country the woods are cut off, the larger birds and mammals are exterminated or driven away, and great disturbances occur in the economy of nature as a consequence of these changes; new plants are introduced and with them new insect pests are brought in from other regions or from foreign countries. As civilization advances large areas like the great grain farms of the northwest, the orange groves and vineyards of California and the great orchards and potato fields of other states are devoted to special crops. These tracts offer great quantities of desirable food and thus stimulate the reproduction of insects to a remarkable degree. The spread of imported species to the very confines of civilization is accelerated by an ever increasing traffic on newly constructed highways and railways, and, as these imported insects escape most of their natural enemies by being brought to this country and find more favorable conditions awaiting them here, their fecundity and destructiveness are increased in undue proportion even to their increased food supply. Such are the cabbage butterfly, the wheat midge, the Hessian fly, the gypsy moth and others. Native species which were harmless to agriculture under natural conditions in the wilderness sometimes

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take advantage of the introduction of a new and succulent food plant and follow it back from the frontier into the agricultural regions, spreading over the whole country and causing widespread injury to a staple crop, as did the Colorado potato beetle. As the country becomes settled and the ravages of insects increase, the settlers, instead of endeavoring to protect and foster the useful birds that were designed by the Almighty to dispose of the surplus insect production, pursue them with the gun and poison until the large useful species are nearly if not quite extinct. The wild turkey, grouse, prairie chickens, wild pigeons, ducks and geese, plovers, wood-peckers, blackbirds, larks, robins, and all birds which are "good for food" are slaughtered relentlessly and without quarter even at the season when the callow young must perish from starvation. The grasshopper-eating buzzards and all hawks and owls are shot at sight, anywhere and everywhere, by all classes of people. Many States offer bounties on the heads of supposed noxious birds, without being aware that such a policy is undermining the agricultural interests. Small birds are hunted for their feathers; bird egging boys increase apace; a million cats forage the fields and woods; fashion calls for millions of birds to deck the ladies' headgear. In the meantime insects increase and run riot. The locust, the chinch bug, the army worm, the codling moth, the plum curculio, the cabbage butterfly, the boll worm, the asparagus beetle, the canker worm, bugs, beetles, aphides, borers, grasshoppers and other insects destroy the ripening grain, sap the lusty fruit tree, devour its leaves, despoil the garden, field and forest and render the life of the successful farmer one continual battle with his insect foes. During the locust invasions in the west hundreds of small farmers lost their all and becoming destitute were forced to leave all they possessed and remove to more favored lands.

In 1854 the loss occasioned in New York State by the wheat midge (*Diplosis tritici*, Kirby) was in excess of fifteen million dollars.[1] The value of wheat and corn destroyed in Illinois in 1864 by the chinch bug (*Blissus leucopterus*, Say) is estimated at seventy-three million dollars.[2] The loss in the four States of

[1] Estimate given by Dr. Fitch, State Entomologist.

[2] 1st Annual Report of Injurious and Other Insects of New York State, By Dr. J. A. Lintner, Albany, 1882, p. 71.

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Kansas, Nebraska, Iowa and Missouri during 1874 from the ravages of the Rocky Mountain locust is estimated at one hundred million dollars;[3] while the annual loss caused by insects in this country is said to be from three to four millions.[4] What wonder then that the farmer is taking desperate means to protect his crops! What wonder that deadly poisons disguised as insecticides are scattered by the ton over the foliage of many of our most important food crops, and that the experiment stations are continually searching for means to quell the annual or periodical raids of insect pests. And yet, strange as it may seem, the most distinctly visible and noticeable of all the influences provided by nature to prevent or control this insect surplus is almost wholly ignored, or worse, neutralized, by the people whom it seems especially designed to benefit. The land birds, that are by their structure, by their habits and preferences especially adapted and designed to consume great quantities of insects are not encouraged, fostered, or protected, but are pursued and slaughtered without mercy. Many of them are regarded as nuisances and pests and their services to agriculture are either entirely ignored or strenuously denied. Now let us look at this question of the utility of insect-feeding birds in the light of reason. There are absolutely no other creatures upon this earth that are so well fitted for searching out and destroying most kinds of insects in all places and at all seasons, over wide area as are the land birds and especially the smaller species. Wherever they are sufficiently numerous they will exert a strong influence for the suppression of any undue multiplication of insects. The very minute insects are all that are likely to escape.

A few of the reasons why birds are useful in checking insect invasions are obvious.

1. Birds by their powers of flight and telescopic visions are admirably adapted to search for and to find food over large areas, as well as for a sudden and swift pursuit of it and an unerring descent upon it when found.

2. The young of most land birds require a great quantity of insect food for their perfect development and, therefore, are raised at a season when their insect food is most abundant.

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[3] 1st report U. S. Entomological Commission, 1877, p. 121.

[4] Report U. S. Dept. of Agr. 1884, p. 324.

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3. During this season the parent birds go to those points where insects are numerous that they may easily secure a sufficient supply for their young.

Hence birds gather in numbers wherever great insect outbreaks occur and not only destroy many insects themselves but feed still more to their young. This gathering continues from season to season until the noxious insect is so reduced in numbers that it is lost to common observation.

The full fledged birds are to a certain extent omnivorous and are thus able to subsist when insect food is difficult to obtain. In winter certain birds are quick to find those localities where the eggs of insects are plentiful.

It is at once seen how well certain families of birds are fitted for the pursuit and capture of certain families of insects. The thrushes dragging unwilling cut worms and grubs from the ground; the ground sparrows gleaning among the leaves and undergrowth for ground beetles; the woodpeckers drilling into the trees for borers; the creepers, nut hatches and titmice searching every crevice and cranny in the bark of the trees, extracting the hidden grubs, eggs and caterpillars; the warblers, vireos and wrens searching the twigs and foliage of plants and trees for the wary insects hidden there; flycatchers, bluebirds, swallows, warblers and swifts, cleaving the air in all directions and snapping up their flying or perching prey; the hawks and bitterns destroying grasshoppers; the owls, night hawks and whippoorwills noiselessly flitting about, pursuing the large night-flying moths, beetles and mosquitoes; all give evidence of perfect adaptation to the pursuit and capture of the insects on which they feed.

Birds of many species follow locust invasions and gorge themselves to repletion. It is a well known fact that birds assemble wherever the larvæ of moths, appearing in great numbers, strip the foliage from the trees. Birds quickly discover such localities and at once resort to them, seeking them as magazines of food supply for their young. I have observed blackbirds flying half a mile over the meadows to a spot where larvæ were plentiful, returning after each visit with caterpillars in their beaks, to feed their young. They seemed to prefer to travel this distance to a point where food was plenty and easily obtained rather than to search for it in the immediate vicinity of their nests. An orchard infested by canker

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worms is visited by birds from far and near and the outbreak is generally checked in one or two seasons, if birds are sufficiently plentiful in the neighborhood. The amount of insect food which young birds will consume is not generally understood. Mr. E. W. Wood of Newton, a well known member of the State Board of Agriculture, informs me that during one season when the spring canker worms (*Anisopteryx vernata*) became quite numerous in his orchard, a pair of Baltimore orioles appeared and built a nest near by. In the meantime they fed daily upon the canker worms. This they continued to do so assiduously that by the time the young were hatched the numbers of the worms were considerably reduced. The birds then redoubled their diligence, carrying ten or more worms to their nest at once. Soon the canker worms in that orchard were a thing of the past. The foliage and fruitage were saved for that and succeeding years. Audubon says a woodcock will eat its own weight of insects in a single night. Samuels quoting from the experiments of Professor Treadwell shows that it was found necessary to feed a young robin forty-one per cent more than its own weight of worms in twelve hours to assure its healthy growth and development. It was found that the bird would consume nearly half its own weight of beef in a day. A man at this rate would eat about seventy pounds of flesh daily. Should a pair of robins have four half-fledged young to provide for, each parent would be obliged to secure a worm or its equivalent every five minutes, for at least ten hours each day, to supply the young with needful food. Wilson Flagg found by experiment that young robins required only insect food and remained healthy and vigorous on that alone. What is true of the young of a robin is undoubtedly true of the young of many other birds. Dr. Brewer says that a pair of jays feed their young five hundred thousand caterpillars in a season. Anyone who will watch robins, wrens, cuckoos, jays, woodpeckers and other birds, while they are feeding their young, will become convinced that the number of insects destroyed by birds is beyond calculation. Many birds eat the eggs of insects, and Dr. Brewer says a pair of jays will destroy a million eggs every winter.

The lecturer next took up the different families of birds in detail, illustrating his remarks by lantern slides of many of the more common and useful birds. This part of the lecture being

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interspersed with references to the illustrations cannot be properly reproduced without them. Among the birds mentioned as particularly useful to agriculture were the vireos, sparrows (excepting the English sparrow), the swallows, tanagers, woodpeckers, chickadees and nuthatches. The crow and the robin were regarded as useful or injurious according to circumstances. The lecturer closed with some remarks on the usefulness of the migratory birds, with illustrations of their haunts both north and south, in cultivated lands and in the wilderness.

MEETING FOR LECTURE AND DISCUSSION.

SATURDAY, March 29, 1902.

A meeting for Lecture and Discussion was holden today at eleven o'clock, the President, O. B. HADWEN, in the chair.

The following lecture was delivered under the auspices of the Massachusetts State Board of Agriculture:

SOME FAMOUS GARDENS OF THE WORLD.

By MISS HELENA T. GOESSMANN, Amherst.

Abraham Cowley, an old English writer of the seventeenth century, in writing of Agriculture and kindred subjects, says "God the first garden made, and the first city, Cain." A little later, in one of his books or essays entitled "Agriculture", he says, "The three first men in the world were a gardener, a ploughman and a grazier; and if any man object that the second of these was a murtherer, I desire that he would consider that after he was so, he quitted our profession and turned builder." So one sees, even in these whimsical, witty, humorous impersonations of Cowley, the tribute to the occupation of the gardener, the tiller of the soil, the planter of flowers.

The two greatest events of Christian history are associated in our minds with garden lore and garden life; the beginning of man's history in the Garden of Eden, and the beginning of the tragedy of the New Testament in the Garden of Gethsemane. Solomon in his song says, "A garden enclosed is my sister, my spouse," and Homer in the Odyssey eulogizes the beauty of

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his garden where the ripe grapes hang down and the scent of the flowers makes the day joyful; where the work of man and the work of the Creator are one. Plato, you know, thought out his philosophy in a garden embowered in thyme and surrounded by fountains and walks, and when the people of his native city objected that the location he had chosen was unhealthy and wished him to live nearer the *Kathemnia*, he said, "I have my garden and in my garden I can think."

Xenophon tells us that when the Greeks sent an ambassador to Cyrus with gifts, he found him in his garden, and not only was Cyrus delighted with his garden, but he took great pride in showing the ambassador about and pointing out trees and plants which he had placed in the earth with his own hands. Aristophanes received inspiration from his garden, and here were probably suggested to him some of the pictures he gives us concerning the political personages of his time. Pliny the Elder eulogizes garden life; Pliny the Younger describes his own garden, where the water flowed down in cascade form, and marble images presided over a circular basin always full but never overflowing. Here he tells us that he ate his midday meal and the dishes of food floated in china fruits and flowers formed upon the water's surface which served as a table.

Saint Jerome wrote, thought, prayed and dogmatized in his garden, and a Chinese writer of the eleventh century speaks particularly of three flowers peculiar to his country,—the chrysanthemum, the pæony and the lily. He says, "In my opinion the chrysanthemum is the flower of retirement and culture; the pæony, the flower of rank and wealth; and the water-lily, the Lady Virtue *sans pareille*."

Petrarch speaks of his Garden of Apollo, all light and brilliant with flowers and fountains. Here he spent the merry hours, the hours of social exchange of the day; but to his Garden of Bacchus, almost strictly classic and secluded, he retired for his hours of composition and study.

Boccaccio, in the fourteenth century, praises the garden, and Erasmus, in the fifteenth century, suggests a scheme of color, simply anticipating in a way, Alfred Austin, who says that "exclusiveness in a garden like exclusiveness in society is a great mistake."

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Sir Thomas More in his writings, and Montaigne in his essays advance the same views, and Sir Francis Bacon suggests that every gardener should have his garden arranged in a succession of blooms so that each month of the year should have its wealth of blooming flowers peculiar to the season, and thus never present an appearance of desertion.

Milton, in the seventeenth century, who learned so thoroughly the truth of his own philosophy, "They also serve who only stand and wait," speaks of this same lack of system in the gardens of his country. Alexander Pope in his letters similarly arraigns the English garden makers for the lack of harmonic simplicity. Yet not so many years later Byron blames Milton and Pope for the confusion of the average English garden. He claims that the English have destroyed their forests, have gone away from the beauty of nature and have made fashionable a stereotyped form of garden for the public, and he thus blames these two men who were all their lives discussing this lack of system. Pope had as a gardener John Serle, who passes into fame through the history of the garden at Twickenham; the garden which was a wonderful study, yet it seems rather an amusing thing to think that Pope should ask for classic simplicity, when from five acres he evolved such a garden that people thought him the owner of twenty-five. It was a series of labyrinths and fountains, and at the close led up to the loved tomb of his mother.

One always thinks of and sees England as a country of gardens. The quaint Hampton Court Gardens, surrounding the palace itself, a creation of the time of Henry VIII, with its thousand apartments, present an interesting study to the student of architecture; neither palace nor the gardens are materially changed since Henry's time. The latter gives one the idea of the tree arrangement and the box hedges, the combination of the French, the Dutch and the English. One Queen, (I think the wife of George II,) disliked very much the presence of the box hedges and caused all of them to be torn up, rather destroying the Dutch effect; but after her death they were all replanted, and are flourishing today. Then, too, at Hampton Court, in the Maze and in the Orangery, while tracing the work of Kent and the influences of André Le Nôtre, the great French gardener, one gets a liberal study in landscape gardening. However, it is not to the French that the English owe the develop-

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ment of their garden system. You have all heard of that good man called "Capability" Brown, who did so much for the English parks. He was always discussing the capability of the earth and the capability of the country, and though his work was filled with mannerisms, he first developed the idea that the woods should be preserved. He had many friends as well as enemies among those interested in the so-called development of the landscape. He was heard to mutter many times before his death, "Oh, Thames, Thames, will you ever forgive me?" simply because he had caused the water of this river to be turned and utilized through the grounds of Blenheim. This was considered by the English of that day almost a desecration of this time honored stream.

However, if one wants to see English gardens in the completest sense, the Isle of Wight is the place to study them. There the traveler finds the richness of the flowers, the general cultivation, the intensifying, as it were, of nature's charms, without the destruction of them. There is one place in New England that gives you a fair idea of the Isle of Wight as one might gaze upon it from Carisbrooke Castle, and that is the view looking northwest from Mount Tom, with the patches of cultivation, the river, the roads and the farm homes. I never see that view in high summer without wanting to close my eyes and transport myself back to some pleasant weeks spent in the Isle of Wight. The poppy which with us is a cultivated flower, grows wild on the Channel Isle and the vast fields of yellow wild mustard in combination with the former make a wonderful picture. Here are hedges of thorn and box everywhere and even the simplest little cabins are covered with rich and luxuriant growths of roses many of them being so large and beautiful that you are surprised when they are offered for sale at the door of your coach for a few pennies, the same blossoms you would pay dollars for in our greenhouses. Everybody appears laden with roses. There is not yet, even in its larger towns, a savor of London about it and the preferences of the late Queen for its home life have kept much of the country simplicity there. The court life at Osborne House is like country life. The only mausoleum in the church there (Wappinham Church) is the marble tomb of the Prince of Battenburg, across the top of which lies a long rusty sword. On the hilt was bound a wreath of French forget-me-nots. I asked the care-taker who placed them there

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and he said that every day when Princess Beatrice was at Osborne House she and her little family came over two miles and brought a wreath of French forget-me-nots to lay on the tomb of the father and husband, and when she was absent the gardener was instructed to do the same tender office in her name.

There has been no biography, perhaps, better deserved, in the history of the French landscape, than that of André Le Nôtre. He was the man who developed Fontainebleau and Versailles and gave the first impulse which preserved to the country the Bois de Boulogne. He was loved of kings and sovereigns, and his epitaph written by Saint Simon claims that one thing can be written of him; he was never an artist with a price; whenever there was a bit of nature to be developed he would put the same thought into his work whatever the compensation might be. He loved nature and worked for it. You realize the presence of such influence when you spend a few hours in the Bois de Boulogne, you see how from a country untilled and land poorly drained it has been developed into, perhaps, one of the most beautiful and attractive parks in the world. The French garden has never influenced the English garden as the English has the French. The country of France abounds in old fashioned flowers, but the French garden is a garden of continuous artificial effects. You can enter an English garden of a large domain and you are positive of what you will find there; you will find the arbors and the walks and the fountains. When you come to the French garden you turn a little group of trees or shrubbery, and where you expect to find a seat you find a nymph, or where you expect to find a fountain you find flowers, yet when you are tired or weary, there is always a comfortable seat. It is filled with surprises like the country itself.

To get, however, near the land that has made the garden a part of the home, one must go to Germany through Holland. You must come in touch with the Delft and the Old Haarlem spirit; see the fields of hyacinths, crocuses and tulips, and scent their odor in the air. In all the shops these blooming flowers are for sale, and tempt to extravagance the lover of flowers. There was a time in the eighteenth century, when bulb growing was the principal occupation of the Dutch people; when they gave up their speculations of every other kind, and their commercial interests for this. Then people made princely fortunes in the sale of these bulbs. There

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is a story told of the almost miraculous escape from extermination of that famous bulb, the *Semper Augustus*. I cannot vouch for the story, but this is it. A merchant owned the last two bulbs of this variety of tulip. He intended to plant them eventually but he wanted all his friends first to realize his unique position, and placed them in a conspicuous place on his desk. He hired a man at one of the wharves to carry a parcel to his office, and the good fellow, not being paid for his services according to his own ideas, when the master's back was turned, put the two bulbs in his pocket thinking they were something good to eat, and then betook himself back to the wharf. He had just eaten one of the bulbs when he was interrupted in his feast by the arrival of his employer, who arrested him, accepting no explanation, and had him immediately put in jail. He had a very difficult task in clearing himself, and when he got finally off all he could say was, "It was a pretty poor onion at that!" They tell you that story often in old Haarlem and claim that from the rescued bulb came all the others of that name now growing in gardens.

When you leave Holland and pass out of the country of dykes, windmills, quaintness and solidity of charm, you come into Germany, and there you find the garden and the home are closely connected. No matter how small and unpretentious the house, there is always a garden, a little trellised arbor and rustic table and chairs at the rear of the house. There the family take their afternoon coffee, the hausfrau sits and knits, the neighbors come in for exchange of gossip and the men rest, smoke, and have their beer while discussing the doings of the day. There is much encouragement for true gardening in Germany. It is one of the most cultivated of lands. Going west, east, north and south it presents a perfect patchwork of gardens. The farmers do not live on their farms; they live in towns or dorfs, and you will find the homes of the people grouped about the church and the casino, while the adjoining country is marked off for farms. There they go during the day to work and return at night, so there is nothing of that isolation that is found in New England where the farms are perhaps miles apart and travel to and from them often almost impossible during some periods of the year.

I was walking one day beside Lake Constance in the Swiss country near Meersburg, where the old castle of the Counts of

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Meersburg hangs on the heights above the latter town. One naturally gravitates toward the church yards in the old world villages because sometimes there you find a bit of missing history of the place, and you often learn interesting facts from the care-taker, who seems to know everything of interest in the town. Among the graves there was one with rather an imposing monument. All the rest were marked by simple little wooden crosses. I asked the old man in charge who it was and he said he did not know; probably, however, somebody who had died before his time at the castle above. On the front of this monument was a crest of nobility and underneath the name Elizabeth von Drost-Hülshoff. I thought it would be very interesting to know who she was and why she was buried so far from her native part of the country, her name being of north German origin. After inquiry in Lucerne of people who had been at Meersburg, and learning nothing, I dismissed it. Some months after I was in Münster, the historic capital of Westphalia. Walking one day upon the old ramparts of the city, I came upon a statue of a woman with a quaint peculiar face, very much after the fashion of Mrs. Browning or Mrs. Hemans, the old-fashioned, classic, intellectual face. I looked naturally for the inscription beneath this statue and found the name "Elizabeth von Drost-Hülshoff, erected to her memory by her loving townsmen in appreciation of her worth, merit and ability." I learned there that she was a poet of the people, the German Longfellow of fifty years ago. She was in another sense the Adelaide Proctor of Germany; a poet of sentiment who appealed to the masses, and every German school girl of twenty-five years ago had learned passages of sentiment from Elizabeth von Drost-Hülshoff in the same fashion that our old fashioned school girls learned of her English contemporary. She lived in the old castle in the town of Münster and the castle was now in the possession of her nephew. This information given me willingly was followed by an invitation to drive to her home, which we did. We had to leave our carriage a mile away from the gates of the estate because of the badness of the roads; it being early in the month of a rainy April. When we reached the castle we found her nephew, the Baron von Hülshoff, a quaint old German gentleman in possession and he made us most welcome. What interested me most was the garden which she had planted herself and which was still a beautiful picture from the

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windows of her small apartment at the south end of the house. One looked down upon a tiny lake on which floated live swans. There was a rich growth of ferns planted all about; in the front of the garden an arbor and a little rustic coffee house looked most attractive. The whole effect of, perhaps, the four or five acres of garden was the same effect she had arranged in 1830, and the fidelity of her family to her memory had kept that garden just as she had left it. It seemed almost, with her broken lute standing in the corner of the room, her portrait looking genially down upon us from the wall and little touches of her art here and there, that one was justified in imagining that she still lived there, and that her spirit pervaded the place. This was only a typical German garden; and repeated itself by Eder and Danube daily. However, there seemed to be between Hohenheim and Stuttgart, perhaps, the greatest variety of German garden cultivation that is found anywhere. The traveler sees the mountain, the forest, the dell, the cultivated garden, one succeeding the other, a beautiful ideal of scenery, and yet every acre of forest or garden is kept in order.

"Elizabeth in Her German Garden," which we have so enjoyed, is a fair idea of the German garden life and the German inspiration of a garden. However, we are not obliged, as a people, to cross the ocean to find gardens of perfection. We have what nature has given us at Yellowstone Park; we have the Adirondack Mountains, the White Mountains and the Green Mountains; and we have parks such as Central Park and the beautiful gardens of Boston, the Public Gardens.

There was a time when the natives of Massachusetts planted corn that they might cover the graves of their dead and conceal the number from the vigilant eyes of the Indians; and today there are some who wall in their beautiful gardens that they may conceal them from the eyes of the curious. This walling in of a garden is an unholy survival of the feudal days. The progress since that day, in the evolution of gardens, is as great as the progress in any other line of development or work in this country.

Speaking also of the debt one owes to one's native town to assist in making it more beautiful, I have in mind a little village in New England, where was very forcibly illustrated, within a year, the effect of a garden or no garden on the entire community. I remember passing occasionally one house where the poor mother

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had little time to think of the plot of ground outside; she had her children to feed and her house to care for. I used to think of this garden as an index to every yard in the street, for they were all of the same character. One day I had occasion to spend a few hours in this village after an absence of months, and passing through that same little street I found that the tenant of this tiny house had moved away, and in her place had come one who realized the possibility of her half acre of garden. She had planted in good order the old fashioned flowers, the house had been painted, vines were trained over it, a little attempt at a rustic arbor had been made and a tiny brook that ran through the yard had been bridged over. This example had spread like a contagion down that entire street. Not a house but had acquired at least a window box or some blooming flower pots to grace its front. The effect of this one woman, having the taste and enterprise to beautify with her own hands her little home, had affected the entire neighborhood.

Some observer in the country said to me the other day, in deploring the incoming of the trolley car, that our country roads were no longer safe for driving as of old but made the remark, "However, the trolley has done a wonderful thing for the front yards." True this is and as we go through the villages and towns we find one person is led to improve because a score of others will ride by viewing.

There are some however who do not appreciate the joys of the country; they have lived so long in the noise and excitement of the great city that to them the country is synonymous with isolation and the blues. Let them once taste for a few months of the year the happiness of looking out from their own windows over a beautiful country, of watching for the first song of the birds and the first fragrant flowers of an early spring day and there will be experienced an elevation of the soul that will make one more patient and philosophical in life.

A certain clerical friend had however a peculiar experience in trying to put this love of nature into a good old woman. She had been for many years a trusted employee in his family, but having grown old and tired in service had gone to live in rooms of her own in a plainer quarter of the town. Her old master felt badly to think of her spending the hot months in the place where

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she was, and so he went to her one day and said, "Jane, my wife and I are going to Europe for the summer and we are going to have a nice cool summer in England, but we can't go away and leave you here, and I want you to try country life while we are away." She said she was very willing; it impressed her as being a variety, at least. So he took her up the Hudson and placed her in a very comfortable farmhouse in care of a good kind hearted woman, paid her board and left her with a goodbye and a feeling that the poor old soul would at least have comfort and coolness. He returned in September, and proceeding up the Hudson, found that Jane had flown weeks before, in a very unceremonious manner back to town. There he went and found her sitting in her attic room in a five-story tenement house, surrounded by her household gods and happy. And he said, "Jane, how could you do this? You are not strong and you need fresh air; why didn't you stay in that beautiful home?" She looked at him and said, "It's a deal better living among people than living among stumps." Jane had grasped the country living in the narrow sense.

There is a philosopher of our modern day who says, "Show me the garden of a man and I will tell you his character and his morality," and perhaps the tribute we owe to the friends of gardening can best be summarized in the words of Charles Dudley Warner who says, "the man who plants a garden is a benefactor to the human race."

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EXPERIMENT STATION REPORTS WANTED.

The Massachusetts Horticultural Society is endeavoring to collect complete sets of the Bulletins and other publications of all the Agricultural Experiment Stations in the United States and Canada. Those named below are wanting, and any person having a spare copy will confer a favor by addressing the Librarian of the Society, Horticultural Hall, No. 300 Massachusetts Ave., Boston.

Alabama (Ag. and Mech. College Station).— Bulletins 4–6 (1884), 7–10 and 1–4 (1885), and 5–9 (1886). 7th Annual Report, for 1894, and 9th, for 1896.

Alabama (Canebrake Station).— All Bulletins later than 18, and all Annual Reports later than the 3d, for 1890.

Alabama (Tuskegee Station).—Bulletin 2.

Arizona. — 4th Annual Report, for 1893.

Arkansas.— Bulletin 1. All Annual Reports later than the 4th, for 1891, except the 8th, for 1895.

California.— Bulletins 32, 1878, and 1, 2, 3, 5, and 50, New Series.

Colorado.— Bulletin 3.

Connecticut (New Haven Station).—Bulletins 1 to 67, inclusive. Annual Reports for 1877 and 1879 to 1883, inclusive.

Florida.— Annual Report for 1892.

Indiana.— (Purdue Univ. School of Ag.). — Bulletin 1. College Reports 1 to 14, inclusive.

Iowa.—Bulletins 54, 55 and 56. (The original bulletins.)

Kentucky.— Bulletin 10.

Michigan.— Special Bulletins 1, 3 and 5. 6th Annual Report, for 1892-93 (contained in Report of Michigan Board of Agriculture, 1893).

Missouri. — Bulletins 9, 13, 15, 16, 19, 20, 25 and 26 of Old Series. All Annual Reports since the 1st, for 1888, except those for 1896 to 1898, inclusive.

New Jersey.— Bulletins 1, 4, 5, 15, 27 and 28.

New Mexico.— Eighth College Catalogue, 1897–98.

New York (Cornell). — 1st Annual Report, 1881–82, and all between that and 1888, except the 2nd, for 1882-83. (Reports of Agricultural Department of Cornell University.)

North Carolina. — Bulletins 1 to 56, inclusive, and 69, 2d ed. 1st to 7th Biennial Reports. Meteorological Division, Bulletin 2 (68*b*). Special Bulletins 1 (77*a*) and 4 (82*a*). Weekly Weather Crop Bulletins 1–21, 1888; 1–24, 1889; 1–25, 1890; 2 and 4, 1891.

North Dakota.— 4th Annual Report, for 1893.

Ohio.— All Bulletins of First Series, except 16, 17, 18 and 19.

Oklahoma. — All Annual Reports previous to that for 1896–97, except that for 1893–94.

Pennsylvania. — Annual Reports for 1869, 1872, 1879–80, 1881, 1882, 1883 and 1884. [All issued by the State College.] Bulletin of Information No. 1.

South Carolina.— All Bulletins of the Old Series (previous to 1888) on the work of the Experimental Farm of the South Carolina College. 3d Annual Report, for 1890, and 6th, for 1893.

Texas.—College Bulletins 1–5, 1883–1887.

Virginia. — 10th Annual Report for 1898-99.

Washington. — Bulletins 28 and 29. 6th, 7th and 8th Annual Reports, for 1895-96, 1896-97, and 1897-98.

West Virginia.— Special Bulletin — Potash and Paying Crops, 1890.

Wyoming.—Bulletins 2 to 4, 9 and 10.

Ontario Department of Agriculture, Toronto.—**Bureau of Industries.** — Agricultural Returns to the Ontario Bureau of Industries, Nov. 1882 (5th), Aug. 1883 (7th), and Nov. 1887 (20th).

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TRANSACTIONS

OF THE

Massachusetts Horticultural Society

FOR THE YEAR 1902.

PART II.

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Robert Manning: from a Photograph taken 1890.

Courtesy of the American Pomological Society.

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TRANSACTIONS

OF THE

Massachusetts Horticultural Society.

BUSINESS MEETING.

SATURDAY, April 5, 1902.

A duly notified stated meeting of the Society was held at eleven o'clock today, the President, O. B. HADWEN, in the chair.

As soon as the President called the meeting to order, Theodore H. Tyndale raised an objection, stating that the meeting had no Secretary. It was, however, stated by the Chair that Mr. Kidder had been appointed by the Executive Committee to succeed Mr. Manning, and when Mr. Tyndale was shown Section XIV he at once withdrew his objection.

The Secretary then read the records of the last meeting, both Mr. Manning's notes and the amplified records.

Richard M. Saltonstall moved, That the records as read by Mr. Kidder, the Secretary, of the doings of the Society at its Stated Meeting held January, 1902, are approved and are hereby adopted as the records of the Society, and that the Secretary be authorized and directed to sign said records.

William C. Strong protested against the statement appended to the records and moved, That that part of the record which now reads as follows, "The proposed Constitution and By-Laws as given below were approved by a majority vote and ordered to be entered upon the records for consideration at the Stated Meeting of the Society on the first Saturday in April," be canceled and instead thereof the following amendment be recorded, to wit:—

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"The proposed Constitution and By-Laws as given below were briefly commented upon by Messrs. Elliott, Strong, and others, and further explained by Mr. Saltonstall. The previous question was then called for by Augustus P. Loring and was put to vote by the President, who declared it passed by a large majority. A motion to reconsider this vote failed to pass."

Francis Blake made remarks supporting the records as read. Mr. Strong defended his own motion.

The Chair stated that at the January meeting he had construed the call for the previous question as being intended to stop debate.

Arthur D. Hill now seconded Mr. Saltonstall's motion.

William H. Elliott asked for the re-reading from Mr. Manning's minutes of the January meeting of the motion to enter on the records the proposed new Constitution, which the Secretary then re-read.

Mr. Loring stated that his motion at the January meeting was to enter the proposed Constitution on the records.

Mr. Blake stated that he had then moved the previous question.

The Chair stated that he had put only the previous question.

Arthur D. Hill stated that this was strictly parliamentary, that the previous question had been put and also the motion to spread upon the records.

Mr. Strong stated that there had been a misunderstanding, that the previous question had passed and he thought no other.

Edward B. Wilder seconded Mr. Strong's motion in regard to expunging certain portions of the record as read.

Mr. Saltonstall stated that he had moved and read the proposed new Constitution, that after some discussion Mr. Blake had moved the previous question and that it was carried ; that Mr. Loring had moved that the Constitution be spread upon the records, and that Judge Hoitt had seconded that motion. He renewed his motion to approve the records as read by the Secretary.

Mr. Strong re-read his amendment.

Mr. Saltonstall stated that Mr. Strong's motion put off the whole question of the new Constitution so that no action could be taken on it that day.

Edwin H. Jose stated that what we wanted was to get the records correct, not necessarily the new Constitution.

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Mr. Tyndale remarked that Mr. Loring should be able to give the correct version of the proceedings.

Mr. Loring stated that he had moved that the new Constitution be spread upon the records after Mr. Ware had taken the chair.

Judge Hoitt stated that he had been at the meeting, that Mr. Loring had moved, as stated, the new Constitution and that that was what was called for when the previous question was moved; that it was the same as the main question; that the Chair had put the main question for the previous question.

Mr. Strong's motion to amend the records was put and lost.

Mr. Saltonstall renewed his motion that the records be approved. Mr. Elliott entered a protest against their approval, and said he should contest it on legal grounds.

The Chair asked Mr. Saltonstall if he meant by his motion to shut off discussion, to which he replied that he most assuredly did not. Mr. Saltonstall's motion was then put and carried.

The report of the Treasurer was presented and General Appleton moved that it be accepted and spread upon the records. Benjamin P. Ware called for its reading. Mr. Blake moved that the Secretary have it printed and mailed to every member of the Society. This was voted, and the Chair called for its acceptance and it was voted to accept it.

The Chair stated that deferred and new business was in order.

Mr. Saltonstall moved, That the amendments to the Constitution and By-Laws proposed at the Stated Meeting of the Society duly held on the first Saturday in January, 1902, in favor of the adoption of which a majority of the members of the Society present at said meeting then voted, and which are entered on the records of the Society be and they hereby are adopted.

J. Allen Crosby moved that when the vote is taken the check list and ballot box be used and that the polls be open two hours.

The Chair appointed J. Allen Crosby, Aaron Low, and E. W. Wood as a committee to receive, assort, and count ballots. General Appleton moved that we proceed to ballot.

Mr. Jose thought we should have further discussion, though he stated that he was not opposed to the new Constitution.

Mr. Blake thought that everyone had had sufficient opportunity to become acquainted with the proposed Constitution.

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The previous question was then called for by Mr. Jose.

Warren W. Rawson moved adjournment, which motion being put, the Chair declared himself in doubt and called for a show of hands and declared the motion lost.

The previous question was called for from all parts of the house.

The Chair declared that Mr. Ware had the floor and that everyone who wished should have a chance to talk.

William B. de las Casas called for the reading of the By-Law under which the Chair refused to recognize the previous question. The Chair read Section XXVII on Amendments.

Mr. Ware continued to talk against the new Constitution, in the midst of uproar. Mr. Saltonstall asked permission to say a word but Mr. Ware would not yield the floor. Philip A. Chase rose to a point of order but was not recognized by the Chair.

The previous question was again called for.

Mr. Saltonstall said that the new Constitution had been twice read at the January meeting, thoroughly discussed and spread upon the records, but he proposed that it be open to limited discussion for half an hour and that he was ready to answer any question in regard to it.

Mr. Strong thought that the meeting had better vote at once. Mr. Elliott wanted half an hour's discussion.

Mr. Jose withdrew his opposition to proceeding to a ballot.

Mr. Saltonstall wanted to amend the motion to keep the polls open two hours, to keeping them open but one hour, and so moved, but afterwards withdrew his motion.

The Chair stated that a motion to proceed to ballot seemed to him in order.

Mr. Elliott thought that some discussion should be allowed.

Mr. Blake again called for the previous question and it was carried.

Mr. Saltonstall moved that the house proceed to ballot upon the new Constitution.

The polls were opened at 12:38, and the ballots were YES and No.

Mr. Saltonstall asked that as many as could, come back at the end of the balloting, about 2:30 o'clock.

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The Chair declared that after the vote was taken, no reconsideration could be had, so that no one need stay from any apprehension.

Mr. Ware, as senior Vice-President, now took the chair, as Mr. Hadwen was obliged to leave.

Mr. Crosby gave warning of the closing of the polls at two minutes before the time for them to close, and at 2:38 announced that the polls were closed.

The ballot committee now proceeded to assort and count aloud in the presence of the meeting, but especially under the eyes of General Appleton, Messrs. Hill, Wilder, and Rawson, first counting every ballot and dividing the yes and no ballots into two piles. Then each pile was counted.

While the balloting was going on, the Chair read the printed ballot of candidates for membership, and stated that all the names would be voted on at once if no objection was made. The ballots were then collected by Edwin A. Hall and the Chair declared elected, as members of the Society:

Miss Caroline P. Atkinson of Brookline,
Robert M. Bailey of Dedham,
Clifton P. Baker of Dedham,
Edward W. Breed of Clinton,
John C. Bullard of Cambridge,
Norris F. Comley of Lexington,
Mrs. Lilian H. Farlow of Cambridge,
James Garthley of Fairhaven,
Richard C. Manning of Salem,
Fred. R. Mathison of Waltham,
Horace E. Ware of Milton.

The Secretary read the following letter:

Salem, Mass., February 21, 1902.

Charles E. Richardson, Esq.,
Treasurer of the Massachusetts Horticultural Society.
Boston, Mass.

Dear Sir: — The brother and sisters of the late Robert Manning, for many years Secretary and Librarian of the Massachusetts Horticultural Society, desire, through you, to express their gratitude to the members

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who sent a beautiful wreath in the name of the Society, to the funeral on Wednesday, and to all, who, by their presence at the services, testified to the high esteem in which they held their departed associate.

Very respectfully,

RICHARD C. MANNING.

The Secretary also read a letter from Mrs. James Comley, thanking the members of the Society for their sympathy extended to her on the death of her husband.

Mr. Crosby now reported for the committee to receive, assort, and count ballots on the new Constitution, that there had been cast a total of three hundred and forty-seven votes, of which two hundred and four were yes and one hundred and forty-three no, and the Chair declared the motion was lost, a two-thirds' vote not having been cast for the new Constitution.

The meeting then adjourned.

NATHANIEL T. KIDDER, *Secretary.*

BUSINESS MEETING.

SATURDAY, July 5, 1902.

A duly notified Stated Meeting of the Society was held at eleven o'clock today. President HADWEN presided and there were forty members present.

President Hadwen read an invitation to this Society, from the Massachusetts State Board of Agriculture, to attend its fiftieth anniversary, which is to be observed at Horticultural Hall, Tuesday, July 22, 1902.

William C. Strong offered the following memorial of the late Secretary, Robert Manning:

IN MEMORY OF ROBERT MANNING.

Suddenly and without warning on the 17th of February, 1902, Robert Manning disappeared from us; ceased from his mortal and passed into the eternal life.

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His membership with us dated from the year 1848, thus giving him fifty-four years of active service, a record which slightly exceeds that of any other member.

Still more significant is the fact that during this time he has been closely identified with the affairs of the Society, and of late years has given active and continuous service.

It was natural that the son of Robert Manning of Salem, the man who established a pomological garden and nursery in the year 1823, six years before the incorporation of this Society, and who was in advance of any other man in the country in the importation and introduction of new fruits, should inherit his father's love for the products of the garden.

Of course he became familiar with the different varieties of fruits and flowers in his early boyhood, and it is probably true that for years past he has been our best authority in identifying fruits.

His service in this direction has been of great value to our members and to the public.

Since the year 1876 he has been continuously chosen Secretary of the Society; and to this office has been joined the duty of editing the Transactions and also the duties of Librarian.

In the year 1878 he completed the History of the Society, a work which reflects equal credit upon the Society and upon the author. Indeed, the book will remain as a standard authority in the early introduction of horticulture into this country, and a comprehensive history of its progress up to the date of its publication.

In all this work of editing in these many years we have reason to hold in high regard the good taste, the carefulness, and the ability with which the work has been done.

Having been engaged in this daily work for the past twenty-six years, Mr. Manning came to be known as the most conspicuous personage of the Society, not alone by the members, but also by pomologists throughout the country, and by all who sought aid from our valuable library.

His knowledge in all departments was sure to be helpful. With modest and quiet dignity and intelligence, he so met his various duties as to contribute largely to the credit and usefulness of the Society.

It has been fortunate for the Society to have enjoyed the services of such a man, so pure and critical in his tastes, so faithful and conscientious in his work, so discerning of its best interests for so many years. Well may his memory be held in enduring regard.

It is therefore voted that this testimonial be entered upon the records of the Society and that a copy thereof be sent to the family of the deceased.

At the conclusion of his address Mr. Strong moved that it be entered upon the records of the Society and that a copy be forwarded to the family of Mr. Manning.

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Benjamin P. Ware in seconding this motion said, that he had been on terms of intimacy with Mr. Manning for many years, and expressed his approbation of the testimony that had been presented as to the value of his long service in this Society. The memorial was then adopted.

President Hadwen, for the Executive Committee, reported the resignation of Nathaniel T. Kidder as Secretary and Librarian of the Society, and the appointment of William P. Rich to the office.

He also offered the following recommendation which was adopted: That an oil painting of the late Secretary, Robert Manning, be obtained at an expense not exceeding one hundred dollars.

Under the head of deferred and new business, William H. Spooner offered the following motion:

Voted: That a committee of seven members of the Massachusetts Horticultural Society be appointed by the President to revise and amend the Constitution and By-Laws now governing said Society, the object of said revision to be the better ordering and transaction of said Society's business affairs, and harmonizing the conflicting views of the members, with power to expend such sums of money for counsel fees, printing and distributing its report, and other contingent expenses as may be found advisable by said committee.

After having been seconded by Edward B. Wilder, the motion was re-stated by the President.

William H. Spooner then read a letter from Arthur D. Hill representing several members of the Society who were unable to be present at the meeting, and stating that he was "authorized to say on their behalf, that they cordially agree in the desirability of the suggested committee, and unite with me in hoping that by this means a plan can be adopted which will be satisfactory to the whole Society."

The motion was then unanimously adopted and the President appointed as the committee:

HENRY P. WALCOTT,
WARREN W. RAWSON,
JOHN K. M. L. FARQUHAR,
EDWIN H. JOSE,
C. MINOT WELD,
RICHARD M. SALTONSTALL,
WILLIAM H. SPOONER.

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The Secretary read letters from Messrs. William E. Endicott and G. W. Humphrey offering their resignations as members of the Library Committee. On motion of Mr. Strong it was voted that the resignations of the two gentlemen be accepted and that the deep regret of the Society be conveyed to them.

On motion of Mr. Strong it was voted that the remaining members of the Library Committee be empowered to fill the vacancies.

The President offered the following names for the Committee on School Gardens and Children's Herbariums:

HENRY L. CLAPP, *Chairman*,
WILLIAM E. C. RICH, *Secretary*,
MRS. H. L. T. WOLCOTT,
MISS KATHARINE W. HUSTON,
CHARLES W. JENKS,
HENRY S. ADAMS,
WILLIAM P. RICH.

On motion of Mr. Strong they were elected.

Mr. Spooner moved, and it was voted, that the Committee on Flowers have power to fill the vacancy on its committee caused by the death of James Comley.

Charles W. Jenks, Chairman of the Committee on Native Plants, reported that he found it difficult to secure members to serve on that committee. On motion of Mr. Spooner, Mr. Jenks was empowered to fill the vacancies.

A communication from Joseph H. Woodford, Chairman of the Committee of Arrangements, addressed to the Executive Committee was read by the Secretary.

It called attention to the lack of seating accommodations in the Exhibition Hall, and offered as a remedy the suggestions made in the last report of the Committee of Arrangements. As this report was not accessible at the time, Mr. Strong moved that the communication of Mr. Woodford be referred back to the Executive Committee.

Thomas Harrison moved an amendment, that the committee prepare a plan of the improvements it desires to have made.

The amendment was accepted and it was then voted to refer the communication back to the Executive Committee.

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The Committee of Arrangements also announced that it had decided to move forward one week all the exhibitions scheduled for July and August and, on motion of Mr. Strong, it was voted that the matter be referred back to the committee with full powers to act.

On motion of Mr. Spooner it was voted that the portrait of the late J. D. W. French, which has been presented to the Society by his family, be accepted, and that the thanks of the Society be extended to the donors.

Action was taken on the death of Messrs. H. H. Hunnewell and James Comley. On motion of Mr. Strong it was voted to request Benjamin C. Clark of the Executive Committee to prepare a memorial of the late Mr. Hunnewell and, on motion of Mr. Harrison, it was voted that Patrick Norton be requested to present a memorial of the late Mr. Comley.

The following named persons, having been recommended by the Executive Committee for membership in the Society were, on ballot, duly elected:

Paul R. Blackmur of Quincy,
John W. Duncan of West Roxbury,
Herbert H. Dyer of Cambridge,
Lucius H. Foster of Dorchester,
Miss Ella F. Hildreth of Lowell,
Allen Hubbard of Newton Centre,
Ellerton James of Nahant,
Mrs. Olivia B. James of Nahant,
N. W. T. Knott of Waban,
E. L. Lewis of Taunton,
Miss Amy Lowell of Brookline,
David Lumsden of Jamaica Plain,
Edward MacMulkin of Boston,
George Melvin of South Framingham,
Alexander Montgomery, Jr. of Natick,
James H. Morton of Boston,
Edward Powell of Taunton,
John Pritchard of Newtonville,

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WILLIAM A. PROSSER of Medford,
ALBERT H. ROFFE of Newton Centre,
CHARLES SPRAGUE SARGENT, JR. of Brookline,
RICHARD CLIPSTON STURGIS of Boston,
EDWARD J. WELCH of Dorchester,
EZRA H. WHEELER of Dorchester,
GEORGE WILLIAM WHEELWRIGHT of Jamaica Plain.

Communications were read as follows:—

From the Eastern New York Horticultural Society inclosing the program of its annual meeting and stating it would be pleased to have the presence on that occasion of delegates from this Society. On motion of Mr. Spooner it was voted that the Committee on Fruits be empowered to name such delegates.

From the Horticultural Society of New York requesting this Society to name delegates to the International Plant Breeding Conference to be held in New York City, September 30, October 1 and 2, 1902. On motion of Mr. Wilder it was voted to refer the subject to the Executive Committee.

Mr. Spooner moved and it was voted, that when this meeting adjourns it be to August 2, 1902. He also stated that at the January meeting action was taken regarding the disposal of the three granite statues of the old hall. They are at present stored in the yard of the Boston Storage Warehouse Company at an expense of sixty dollars a year. An offer of one hundred dollars has been received for them. Benjamin P. Ware arose and said that he would give one hundred and fifty dollars for them.

Mr. Spooner moved and it was voted, that the matter be referred back to the committee having it in charge.

The meeting then adjourned.

WILLIAM P. RICH, *Secretary.*

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BUSINESS MEETING.

SATURDAY, August 2, 1902.

An adjourned meeting of the Society was held at eleven o'clock today. President HADWEN presided and there were twenty-five members present.

The Library Committee reported the appointment of Charles W. Jenks and T. Otis Fuller, to fill the vacancies caused by the resignations of Messrs. Endicott and Humphrey.

The Secretary reported the death of Daniel T. Curtis, who was for many years an active member of this Society.

Remarks concerning Mr. Curtis were made by Jacob W. Manning, Thomas Harrison, and the Secretary. It was voted that these three members be appointed a committee to prepare a memorial of Mr. Curtis.

The President appointed the following named members a committee to nominate candidates for Officers and Standing Committees for the ensuing year:

WILLIAM H. SPOONER, *Chairman*,

ARTHUR H. FEWKES,	BENJAMIN C. CLARK,
E. W. WOOD,	AARON LOW,
J. WOODWARD MANNING,	PATRICK NORTON.

The following named persons, having been recommended by the Executive Committee for membership in the Society were, on ballot, duly elected:

HAROLD J. COOLIDGE of Boston,
ARTHUR E. DAVIS of Wellesley,
MRS. ARTHUR E. DAVIS of Wellesley,
MRS. ROBERT C. HOOPER of Boston,
G. D. LOW of Boston,
E. PREBLE MOTLEY of Boston,
MRS. ELLEN R. PICKMAN of Boston.

Adjourned to Saturday, September 6.

WILLIAM P. RICH, *Secretary*.

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BUSINESS MEETING.

SATURDAY, September 6, 1902.

An adjourned meeting of the Society was held at eleven o'clock today. President HADWEN presided, and there were twenty members present.

Patrick Norton offered the following memorial of the late James Comley, which was read by the Secretary.

IN MEMORY OF JAMES COMLEY.

James Comley, the subject of this sketch, was born at Derry Hill, England, May 29, 1835. His father's freehold adjoined the estate of the Marquis of Landsdowne in Bowood.

In his early childhood he became very fond of horticulture, so much so that he was apprenticed for six years to learn the profession of gardening in all its branches. But at the end of five years he had become so proficient, under the instructions he had received at the Marquis of Landsdowne's establishment, that he was allowed to graduate a fully competent gardener.

Shortly after this he came to America, and becoming acquainted with Mr. Evers, a copartnership was formed under the name of Evers & Comley, as flower merchants and decorators. They had the honor of decorating the Revere House when the Prince of Wales was there, also the Boston Theatre, on the occasion of the grand ball given in honor of the Prince, now King Edward VII of England.

After remaining in business in Boston for several years, he removed to Worcester, where he devoted himself to the general florist's business for three years and then returned to Boston.

About this time he became acquainted with the late Francis B. Hayes. This was in 1870 and Mr. Comley was in Mr. Hayes' employ for many years after.

In the year 1892 Mr. Comley took a trip to Japan and on his return brought with him many rare plants and seeds from that interesting country.

He has been also very fortunate in producing some fine seedling roses, rhododendrons, and other plants, which added materially to his reputation as an enthusiastic horticulturist.

Mr. Comley was a large exhibitor at the shows of the Massachusetts Horticultural Society and his exhibits of rare and curious flowers and plants added very materially to the success of the exhibitions.

Mr. Comley was a man one could depend upon, for his word was as good as his bond. He was genial in his intercourse with mankind and generally beloved by all who knew him.

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His last exhibition before the Massachusetts Horticultural Society was at the Chrysanthemum Show in the fall of 1901, when he was awarded a silver medal.

While busily engaged in the vocation he loved, apparently in good health, on February 1, 1902, he suddenly expired, deeply regretted by all who knew him. *Requiescat in pace.*

PATRICK NORTON.

On motion of William H. Spooner, it was voted that the memorial be accepted and referred to the Committee on Publication.

The Secretary, as Chairman of the Committee appointed to present a memorial of the late Daniel T. Curtis, reported as follows:

IN MEMORY OF DANIEL T. CURTIS.

Daniel T. Curtis was born at Cambridge, Massachusetts, January, 1815, and died at Dorchester, July 26, 1902, at the ripe age of eighty-seven years and six months.

He was elected a member of the Massachusetts Horticultural Society in 1849 and for a period of thirty years following was actively engaged in its work. He was for eight years Chairman of the Committee on Vegetables, in each of which he rendered a full and faithful report.

He was also associated at various times, until 1878, with the Committees of Arrangements, Library, and Fruits, and was one of the committee of ten appointed to make arrangements for the laying of the corner stone of the Tremont Street Horticultural Building, August 18, 1864.

In all these years his interest in the Society was manifested by his frequent contributions to our exhibitions of plants, flowers, and vegetables, as well as by the great amount of work which his connection with the several committees mentioned must have entailed.

He was engaged in the seed and garden supply business in Boston for many years and was for a long period associated with Mr. E. W. Cobb of Newton, under the firm name of Curtis & Cobb, finally going out of business in 1878.

After a residence of many years in Boston, he lived for a time at Sharon, then at Medford, and the closing years of his long life were spent at Dorchester where he died.

He married about the year 1850, Mrs. Sarah Dupee of Boston, who has been several years deceased, leaving no issue by him.

His parents have long since departed and a large family of brothers and sisters have also all passed away in advance of him, and thus he leaves no near relatives excepting nephews and nieces.

To Mr. Cobb, his business partner for twenty-three years, your committee is indebted for much of the material of this sketch of Mr. Curtis' life.

Mr. Cobb testifies to the character and worth of his old friend and associate in the following tribute to his memory:

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"He was the most genial of men, unselfish to a fault, nothing apparently giving him more pleasure than to be able to bestow a favor upon an acquaintance, making friends easily and always popular with those with whom he came in business contact. He had also to a remarkable degree the confidence and esteem of very many of the older, prominent citizens of Boston, and I may say also of those of many other sections of New England, in every walk of life, who were numbered among his business patrons."

By reason of the infirmities of advancing age and the fact that he had outlived nearly all of his former associates, he had long since passed from the stage of active work, and now that his life's record is closed, we offer this tribute to the memory of one of the great company of earnest men, through whose interested labors in the past, our Society has attained its present high position.

WILLIAM P. RICH,
JACOB W. MANNING,
THOMAS HARRISON. } *Committee.*

On motion of Mr. Harrison it was voted that the memorial be accepted and referred to the Committee on Publication.

William H. Spooner, Chairman of the Nominating Committee, reported a printed list of candidates for Officers and Standing Committees for the year 1903.

Benjamin P. Ware moved that the report of the Nominating Committee be accepted and his motion was seconded by Mrs. E. M. Gill.

John K. M. L. Farquhar suggested that action on the report be delayed until an expression of opinion regarding it could be had from the new committee on the revision of the Constitution.

He thought that fewer members on some of the Standing Committees would be desirable, and that better results would be obtained from a small committee of three experts, who should receive a more liberal compensation for their services than is at present paid. He also stated that another list of candidates might be presented and, if so, it would be with the idea of promoting the best interests of the Society.

Mr. Ware, in reply, remarked that we are acting under the present Constitution and he saw no other way for the committee to act except in accordance with it.

The President then stated the motion of Mr. Ware, which was that the report of the Nominating Committee be a pted, and it was so voted.

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On motion of Mrs. H. L. T. Wolcott it was voted, that the Nominating Committee be continued and have power to fill any vacancies that may occur.

A communication was read announcing the death of George W. Willis of Chelsea, and the Secretary offered the following resolution which was adopted:

The Massachusetts Horticultural Society learns with deep regret of the death on August 26, of George W. Willis, for thirty-four years a valued member of this Society, and we hereby extend to his family the expression of our appreciation of his interest in our work, and also our sincere sympathy in the loss they have sustained.

A letter from Richard C. Manning of Salem was read, acknowledging the receipt of a copy of the memorial of the late Secretary, Robert Manning, and thanking the author of the memorial and the members of the Society for their grateful and considerate action in testimony of their value of the services and their respect and regard for the character of our brother, the late Secretary.

The President spoke on the subject of the disposition of the three granite statues of the old building and, on motion of William H. Spooner, it was voted that the committee to which the matter was referred be discharged and the subject referred to the Executive Committee with power to act.

The meeting was then dissolved.

WILLIAM P. RICH, *Secretary.*

BUSINESS MEETING.

SATURDAY, October 4, 1902.

A duly notified Stated Meeting of the Society was held at eleven o'clock today, it being the Annual Meeting for the choice of Officers and Standing Committees for the ensuing year. President HADWEN presided and there were about forty members in attendance.

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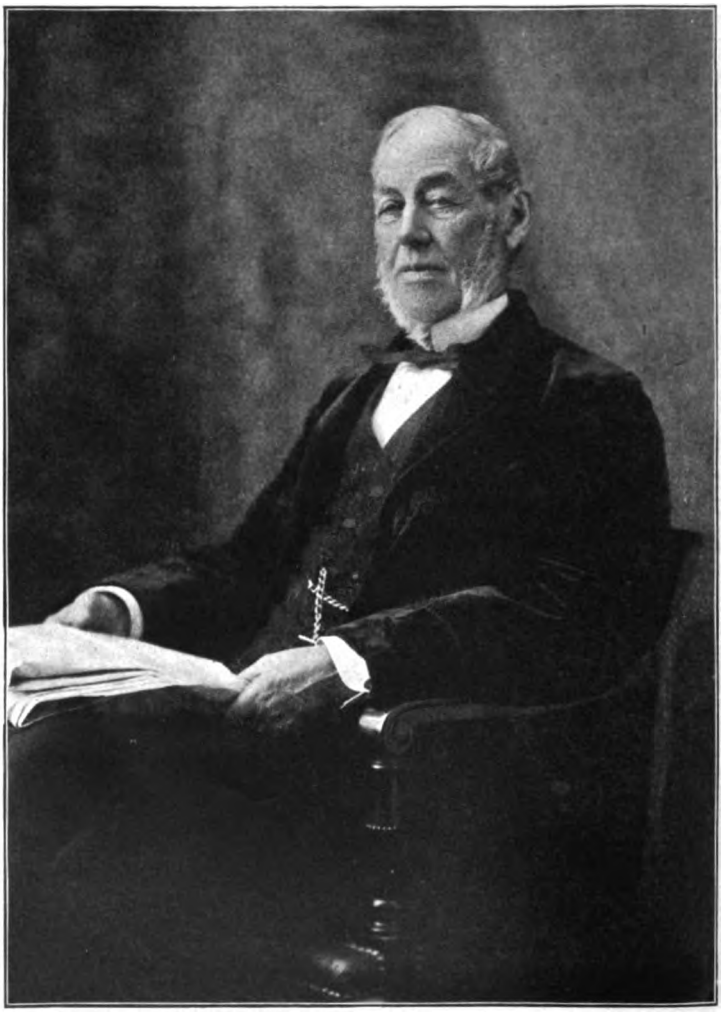

Horatio Hollis Hunnewell.

Courtesy of "Our Town", Wellesley, Mass.

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William H. Spooner moved, that, as the Nominating Committee had no further changes to make in the list of nominations reported in the printed ballot, its report be accepted and the Committee discharged, and the motion was carried.

The Executive Committee reported that the Treasurer of the Society had received $800 from the Executors of the will of Benjamin H. Pierce of Watertown, the principal to be kept intact, the income to be used for the introduction of new fruits.

On motion of Mr. Spooner it was voted that the bequest be accepted.

On motion of William C. Strong it was voted to extend an invitation to the American Pomological Society to hold its next Session in the building of the Massachusetts Horticultural Society, in September, 1903, and to offer such use of the Halls of the Society as may be necessary.

The Executive Committee also reported a recommendation for the appropriation of one hundred and fifty dollars for the Library Committee, for the purchase of two card-catalogue cases with the necessary accessories, and on motion of Benjamin C. Clark, the recommendation was adopted.

On motion of Mr. Clark it was voted that a committee of three be appointed with full power to procure a portrait of the late H. Hollis Hunnewell. The President appointed as the committee, Benjamin C. Clark, William C. Strong, and William H. Spooner.

Mr. Clark presented and read the following memorial of the late H. H. Hunnewell:

HORATIO HOLLIS HUNNEWELL,

Born July 27, 1810.

Died May 20, 1902.

By BENJAMIN C. CLARK.

It is a pleasant custom of our Society that however eloquent and appreciative may be the eulogies of our members elsewhere, we reserve for the pages of our own record the memorial tribute, however humble, of those

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who have given marked evidence of their interest in the aims and objects for the promotion of which our organization has existed for nearly three-quarters of a century.

It is not often that we have the opportunity to commemorate the life and services of a man like Mr. Hunnewell, of whom it is not too much to say that we have never lost a member who has left our State as well as our Society under greater obligations. In thinking of him one is reminded of what is told us of Solomon, that "God gave him wisdom and understanding exceeding much and largeness of heart, even as the sand that is on the sea-shore." "He spake of trees, from the cedar tree that is in Lebanon even unto the hyssop that springeth out of the wall." And in the gift of wisdom Mr. Hunnewell found that "length of days was in her right hand and in her left hand riches and honor."

Horatio Hollis Hunnewell was born in Watertown, July 27, 1810. His father, Walter Hunnewell, a graduate of Harvard, was a physician and practised medicine in Watertown for a period of sixty years. Dr. Hunnewell married Miss Susanna Cooke, of Watertown, and was the seventh generation from Roger Hunnewell who came from England to this country about the year 1640. Mr. H. H. Hunnewell, the subject of this sketch, received an excellent education in the schools of Watertown and later in France, and in 1893 Harvard University conferred upon him the honorary degree of A. M.

At the age of fifteen years, Mr. Hunnewell went to Paris and ten years later became a partner in the banking house of Welles & Co., a firm well known to all American travelers. In the same year he married Isabelle Pratt Welles, daughter of the Hon. John Welles, of Boston, remaining in Paris until his return to the United States when he established the house of H. H. Hunnewell & Sons, in Boston. In passing we note from various sources the great interest displayed by Mr. Hunnewell's father-in-law in farming matters. His reports on Orchard and Forest Trees and Grasses, on Milch Cows, Heifers, etc., on Woodland and Forest Trees, and also on Asparagus, on experiments, discoveries and inventions, all show him to have been a man of enlarged views. Mr. Welles was one of the earliest members of our Society, being a subscriber before its organization in 1829, continuing his membership until his death in 1855.

To return to Mr. Hunnewell. It is a singular fact that until he was over forty years of age he never manifested the taste for arboriculture and horticulture in the direction in which he became so proficient. Although taking an active part in business, being largely interested in Western railroads and a director in many financial institutions, he always found time to devote to his favorite pursuits and he was never happier than when he was extending his generous hospitality to his many visitors. His benefactions were numberless. The gifts of a town hall, library, and park to the town of Wellesley were among them. Perhaps one of the best evidences of his kindness of heart was his habit, as stated by the Chairman of the Board of

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Selectmen, when leaving for his winter home in Boston, of saying to the Town Clerk, "Be sure and do not allow any one to suffer during cold weather; send them whatever they need and I will pay the bill." *Ex uno disce omnes.*

No one who was present will ever forget the twenty-third of May, the day of Mr. Hunnewell's funeral. The simple service, the flags at half-mast, the places of business all closed, testified to the universal respect for him who had gone from our presence and entered into the higher life through "the portal we call death," after nearly ninety-two years which, to use his own language, "he had been permitted to pass by the love of the Lord, his Creator, in this fair land." As one gazed at the solitary oak which, with the exception of the pines, was the only tree upon the land when Mr. Hunnewell commenced his labors at Wellesley, he could realize the force of the expression of "the wilderness blossoming as the rose;" every tree and every blossom seemed to testify of his taste and care.

No man could have been a greater benefactor than was Mr. Hunnewell to our Society. His fund established for annual prizes, his contributions to our exhibitions, his personal labors on our committees, all will cause his name and memory to be held in grateful recognition for many a long year to come. In closing, I venture to borrow these beautiful lines from "Our Town" for July, 1902, a memorial number of a monthly magazine printed at Wellesley.

H. H. H.

Each year, when sun and shower and lengthening days
Brought back to earth her sweetness and perfume,
A gracious presence trod our quiet ways
And joyed in all their loveliness and bloom.

A grave, observant man: whose gaze serene
Looked out upon the world and found it good.
The faithful steward of a Power unseen
For wide and wise beneficence he stood.

To lesser things he gave a thoughtful care;
The humblest need or sorrow touched his heart.
He made the waste a garden but to share
With friend and stranger all its perfect art.

Life gave him generous gifts in ample store
Of all the things that men do greatly prize;
Health, wealth, the joys of home, the mystic lore
Of tree and flower unveiled before his reverent eyes.

Blessing and blest he lived. The happy years
Slipped softly into shadow, and their end
Was peace. For him all joy, for us the tears.
Our world has lost a helper and a friend.

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On motion of Mr. Spooner it was voted that the memorial be adopted and referred to the Committee on Publication and that a copy be sent to the family of Mr. Hunnewell.

On motion of Mr. Clark it was voted that the polls at the annual election be kept open for two hours and, on motion of Mr. Strong, it was voted that the polls be opened at 11 : 30 A. M. and closed at 1 : 30 P. M.

The President appointed Aaron Low, E. W. Wood, and Edwin A. Hall a committee to take charge of the check list, and to receive, assort, and count the ballots.

The following named persons were elected to membership in the Society :

MRS. HENRY L. HIGGINSON of Boston,
FRANK H. EVANS of Malden,
F. L. OAKES of Newton,
CHARLES L. HOVEY of Waban,
GEORGE B. LEIGHTON of Monadnock, N. H., and St. Louis, Mo.

On motion of Mr. Spooner it was voted that when this meeting adjourns it be to the first Saturday in November.

The following communications were read by the Secretary:

From Mrs. R. A. Martin of Chelsea, acknowledging the receipt of the resolution of the Society respecting the death of her father, George W. Willis.

From Henry John Elwes, F. R. S., of Cheltenham, England, requesting permission to republish, in the Journal of the English Arboricultural Society, a Lecture on the Propagation of Trees, by Jackson Dawson, published in the Transactions for 1885, and also informing the Society that he was engaged in collecting material for a large work on the trees of Great Britain. He solicited the interest of the Society in this undertaking.

On motion of Benjamin P. Ware it was voted that the request of Mr. Elwes be granted.

The death of Lamont G. Burnham of Essex was announced and, on motion of Mr. Low, it was voted that a committee be

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appointed to prepare the customary record of Mr. Burnham's life. The President appointed as that committee Aaron Low, Benjamin P. Ware, and Henry G. Jordan.

President Hadwen called the attention of the members to the portrait of the late Robert Manning, which had been placed in the Library.

The President being obliged to leave called Vice-President Ware to preside during the rest of the meeting, and at a few minutes after half-past one o'clock the committee on the voting lists reported sixty ballots cast, and that the list of candidates reported by the Nominating Committee had been elected.

The result of the election was also stated by the President *pro tempore*, who declared the candidates to be the duly elected Officers and Standing Committees for the year 1903.

Adjourned to Saturday, November 1.

WILLIAM P. RICH, *Secretary.*

BUSINESS MEETING.

SATURDAY, November 1, 1902.

An adjourned meeting of the Society was held at eleven o'clock today. President HADWEN presided and there were fifteen members present.

The Executive Committee reported a recommendation that the following amounts be appropriated for prizes and gratuities for the ensuing year:

For	Plants	$1,500.00
"	Flowers	1,875.00
"	Native Plants	125.00
"	Fruits	1,275.00
"	Vegetables	900.00
"	Gardens and Greenhouses	375.00
"	School Gardens	75.00

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These amounts are twenty-five per cent less than those appropriated for the year 1902.

On motion of William H. Spooner it was voted that the consideration of the report of the Executive Committee be postponed to the next meeting of the Society.

Thomas Harrison spoke of the work of the Committee on Lectures and Publication and thought that the Chairman should receive compensation for his services. He moved that the Chairman of the Committee on Lectures and Publication be paid one hundred dollars annually, and the other members one dollar a day, for such time as they devoted to the work of the Committee.

William C. Strong offered some remarks on the motion to pay salaries to the Committee on Lectures and Publication. He thought it an unfortunate time to bring up the subject as the Society was facing a deficit of some $4,000 a year.

The motion was not seconded.

The following named persons were elected to membership in the Society:

ARTHUR NIXON of Taunton,
CHATTERTON WARBURTON of Fall River,
GEORGE F. FABYAN of Brookline,
EDGAR HOWARD DOANE of Wenham,
OSCAR HOSMER of Wenham,
ALFRED PRESSON of Gloucester,
RICHARD D. KIMBALL of Waban.

A communication from Francis H. Appleton was received, containing a check for $123.61, the proceeds of the Opening Flower Show of 1901. It was requested that the amount be expended for library purposes.

On motion of Mr. Harrison it was voted to accept the communication and check of Mr. Appleton and to devote the proceeds as indicated.

A communication was received from the Massachusetts Fish and Game Protective Association requesting the Society to send one or more delegates to a convention to be held in Boston on November 13.

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On motion of Edwin A. Hall it was voted to accept the communication and to appoint two members as a committee to represent the Society on that occasion. The President appointed as the committee, Benjamin C. Clark and Charles E. Richardson.

Adjourned to the first Saturday in December.

WILLIAM P. RICH, *Secretary.*

BUSINESS MEETING.

SATURDAY, December 6, 1902.

An adjourned meeting of the Society was held at eleven o'clock today. President HADWEN presided and there were twenty members present.

The Secretary read the Annual Report of the Secretary and Librarian. J. Woodward Manning, Chairman, read the Annual Report of the Committee on Flowers.

E. W. Wood, Chairman, read the Annual Report of the Committee on Fruits.

Warren H. Heustis, Chairman, read the Annual Report of the Committee on Vegetables.

Arthur H. Fewkes, Chairman, read the Annual Report of the Committee on Plants.

Patrick Norton, Chairman, read the Annual Report of the Committee on Gardens.

William H. Elliott, Chairman of the Committee on Establishing Prizes, presented the proposed Schedule for 1903.

William H. Spooner, Delegate to the Massachusetts State Board of Agriculture, made his Annual Report.

These reports were separately accepted and referred to the Committee on Publication.

The following named persons having been duly recommended by the Executive Committee were, on ballot, elected to membership in the Society.

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EMIL JOHANSSON of Brookline,
CHARLES E. HELLIER of Boston,
HERBERT W. RAWSON of Arlington.

The Secretary reported the death of Henry Probasco and offiered the following motion which was voted:

The Massachusetts Horticultural Society learns with deep regret of the death on October 26, of Henry Probasco of Cincinnati, Ohio, for eleven years a Corresponding Member of this Society, and we hereby express to his family our appreciation of his interest in this Society and our sincere sympathy in their bereavement.

On motion of Patrick Norton the thanks of the Society were voted to Edward Hatch, Esq., for the special prizes offered by him for fruit-houses.

On motion of J. Woodward Manning it was voted to express the thanks of the Society to Mrs. J. Montgomery Sears, Messrs. Kelway and Sons, and The Society of American Florists for the various prizes offered by them.

On motion of William H. Spooner it was voted that the report of the Executive Committee referring to the appropriations for prizes and gratuities for 1903 be laid upon the table for final action at the January Meeting.

The meeting was then dissolved.

WILLIAM P. RICH, *Secretary.*

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ROBERT MANNING.

BY WILLIAM P. RICH.

To record the life work of Robert Manning would be to recite the history of the Massachusetts Horticultural Society for nearly the whole period of its existence.

His father, of the same name, was one of the founders of the Society and was present and elected a vice-president at its first meeting for organization, March 17, 1829.

The senior Robert Manning was a pioneer in this country in the extensive cultivation of fruit trees for commercial purposes, and began as early as 1817 the establishment of an orchard and nursery at Salem, Massachusetts, for the purpose of growing a large number of fruit trees, of various kinds, in order to test by cultivation, their adaptability and hardiness for the New England climate. He procured and distributed many new varieties of fruits from Europe and got together the largest collection of fruit trees then known in the United States, having, it is said, one thousand varieties of pears alone. For many years he was the leading authority in the country on the cultivation and nomenclature of fruits.

His little book on Fruit Trees, published in 1838, of which several editions are in the library of the Society, was the precursor of the long line of such publications continuing to the present day.

Into this pomological garden at Salem, the son Robert was born July 6, 1827, and in the midst of these surroundings was his whole life passed.

It is related that before he could plainly pronounce the long name of the Society he would say to his father, when a new or interesting variety was under discussion in the family circle, "Take it to the horticultural exhibition."

In his early years he was frequently called upon to take a basket of fruit to the exhibitions at Boston and so he felt, as he often expressed it in later years, that he was "born into the Horticultural Society."

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As a boy he was of a somewhat reserved nature, quiet and studious, not especially interested in sports, but fond of walking, that recreation of observant and thoughtful minds. He was ingenious in mechanical work, interested in general literature, especially history, biography, and poetry, and a youth of high moral standards; qualities of character similar to those of his renowned cousin, Nathaniel Hawthorne.

At the age of eleven years he was graduated from the North Salem Grammar School and in 1838 entered the English High School of Salem, completing the course in 1841.

The quality of the young man and his record at that time are shown by the fact of his being engaged for the ensuing term as an instructor in the school.

The death of his father the following year, 1842, brought him face to face with his life's work and to that end he had been trained and instructed by his father.

Although a boy of fifteen, he and his brother Richard at once took up the work of the pomological garden and carried it on for many years, and the name Robert Manning which had been from the founding of the Society a familiar one upon its records was to be continued for a further period of nearly sixty years.

The first exhibition of fruits by Robert and Richard, after their father's death, is recorded in the Transactions under date of September 13, 1843, when they exhibited a large number of varieties of pears, apples, peaches, and plums.

The report of the fruit committee on the exhibition of September 18, 1844, contains the following paragraph:

"We are glad to see the sons of the lamented Manning so much engaged in the favorite pursuit of their father. They have our best wishes that their efforts may be crowned with success. Notwithstanding their soil is not rich or calculated to produce large specimens, yet their collection of pears obtained the second prize for the greatest number of kinds and the best grown."

At the exhibition held September 16, 1845, Robert Manning of Salem contributed two hundred and forty varieties of pears, all named. At the Nineteenth Annual Exhibition of the Society held September 22, 1847, he showed two hundred and fifty-five varieties of pears, and on September 2, 1848, two hundred and sixty

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sorts of pears and one hundred and eighteen varieties of apples. In 1848 he became a life member of the Society and was appointed one of the standing committee on fruits, serving in this capacity at different times for many years.

During the fifteen or more years following we find him occupied with his pomological garden, displaying its products at the various exhibitions of the Society, and making an occasional visit to the conventions of the American Pomological Society with his friend, Marshall P. Wilder.

He had an intimate acquaintance with the leading pomologists of the country and attended the first meeting of the American Pomological Society in 1849, on which occasion, although but twenty-two years old, he was appointed on a committee to prepare a list of fruits for general cultivation of which committee Andrew J. Downing was chairman.

In 1869 he was appointed editor of Tilton's Journal of Horticulture and contributed to its pages many articles on fruits and plants. His connection with this magazine was terminated by its discontinuance in 1871.

In 1874 he was engaged to edit the Transactions of the Massachusetts Horticultural Society, the office of editor being then established under the presidency of William C. Strong.

He served in this position the following year when the office of editor being then discontinued, he was elected Secretary of the Society, his first annual report being that for 1876. From this date until his death he was prominently identified with and actively employed in the conduct of the Society's affairs.

In 1880 under his supervision and editorship was brought to a completion the "History of the Massachusetts Horticultural Society," concerning which the committee in charge of the work remark in their preface, "The Editor, Robert Manning, has brought to the work the utmost faithfulness and constant endeavor to secure strict accuracy. The investigation of records, often obscure, has required much time and labor and unwearied application, and to him is due the credit of bringing the history to its present form." Here it may be stated that all of his editorial and clerical work was characterized by much literary ability, good taste, and above all, by painstaking effort in verifying references and substantiating statements of facts.

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He had a most retentive memory and was from his boyhood diligent in storing away in his mind interesting facts and poems. He was especially fond of poetry and could repeat the whole of Scott's Lady of the Lake, the greater part of the Lay of the Last Minstrel, Marmion, and many of the poems of Whittier, Bryant, and Longfellow, besides those of other authors.

In later years this practice, with his wide reading of standard literature, especially in history, biography, and travel had given him a mine of information from which he was wont to draw as occasion required. He had also a keen appreciation of the humorous side of life, and took delight in the hearing or relating of a good story.

The great library of the Society to which his father contributed its first volumes was developed under his care and the generous interest of its friends until it has become one of the notable horticultural libraries of the world.

He was familiar with every book and guarded them with almost jealous solicitude, yet always ready and helpful to aid the inquiring student in searching out the treasures they contain.

Although his special interest was in pomology, he was well versed in other departments of horticulture, to which, with his familiarity and acquaintance with horticulturists and horticultural literature, he brought the ripe fruitage of his own long and practical experience.

The value of his pomological work has been recognized in the following awards of medals which have been bestowed upon him.

1845. Silver Medal from American Institute, N. Y., to Robert Manning for one hundred choice varieties of autumn and winter pears from his own grounds.

1855. Silver Medal from Massachusetts Horticultural Society to Robert Manning for collection of pears.

1876. Bronze Medal for a collection of fruits exhibited at the U. S. Centennial, Philadelphia.

1881. Silver Medal for eminent services in Pomology, from the American Pomological Society.

1900. Bronze Medal for work in Pomology, Paris Exposition.

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In his home life he was contented in the companionship of his sisters, and his leisure hours were occupied with his garden and his trees. Thus the years glided serenely by until the last Saturday night came that called him from his accustomed duties.

Early on the following Monday morning, February 17, 1902, the final summons came suddenly, and in the home where he was born he passed away at the age of seventy-four years and seven months.

It is fitting that upon the pages of these Transactions, which for twenty-eight years have borne witness to his faithful service, there should be placed the tribute of appreciative remembrance.

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REPORT

OF THE

COMMITTEE ON PLANTS

FOR THE YEAR 1902.

By ARTHUR H. FEWKES, CHAIRMAN.

Your committee is pleased to report continued interest in this department notwithstanding predictions to the contrary. The past year has been an experimental one in some respects, as it was the first year during which exhibitions were held in our new hall. The discouraging conditions under which the exhibits were obliged to be made seem not to have deterred exhibitors from making fine displays, although many complaints have been made of the inharmonious effects produced by the unfortunate color of the walls, against which many of the plants were obliged to be staged.

The year has been fruitful in new introductions, many of them of the exhibitors' own productions, and the awards for these show that the year is not behind previous ones in this respect.

It is noticeable also that many of the awards have been made on Saturdays, showing that the exhibitors appreciate the weekly shows, knowing that it provides a chance for them to offer their plants at any time when they may be at their best. It surely would be a great loss to abolish this privilege, not only to the owners of the plants, but to the public also.

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At the large exhibitions we have been mostly dependent upon a few old exhibitors for the greater part of the displays made, although there have been several new ones whose plants have been very welcome, if few in number. While this is not wholly desirable it cannot be avoided owing to the limited number of persons who have suitable plants and are willing to place them on exhibition.

As the general features of the various exhibitions are not materially different from year to year, each show will not be taken up separately, but such exhibits as seem to be of unusual interest or which are educational or instructive in their nature will receive attention.

The first exhibit to claim our attention, outside of the regular prizes, was made on Saturday, February 8, by William Thatcher, who made a display of his seedling asparagus, and which he entered in competition for the prizes offered by the Society of American Florists. It seems to be a chance seedling from *Asparagus tenuissimus*, with the same foliage, but of a very dwarf habit, making it particularly valuable for pots and jardinieres if it can be propagated with sufficient ease. This with *Nephrolepis Piersoni*, which we will describe later, were the only ones shown in competition for this prize and we recommend the award of the first prize for the *Nephrolepis* and the second for the *Asparagus*.

On March 1, James Garthley, gardener for H. H. Rogers, Esq., showed a very remarkable variegated plant, *Saxifraga sarmentosa tricolor superba*, which was brought from Scotland by him the previous autumn. It is a very beautiful variegated form of the old strawberry geranium, so-called, the leaves being beautifully marked with white and pink. While it is not an entirely new plant, it has never been shown here before and it was awarded the Society's Silver Medal.

On the same day there was shown before the Society for the first time two other plants of much merit, *Odontoglossum midgleyanum* from H. H. Hunnewell, and a hybrid *Cypripedium* raised by J. E. Rothwell, named Edmund Rothwell, a cross between *Sallierii Hyeanum* and *C. Hookerae*. The Society's Silver Medal and a First Class Certificate of Merit were awarded respectively.

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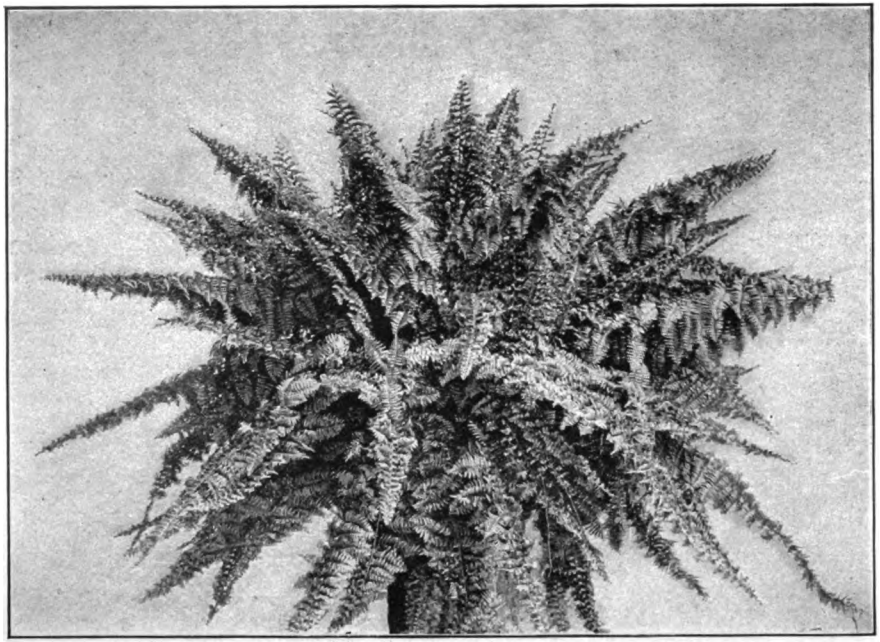

The Pierson Fern.

Courtesy of the F. R. Pierson Company.

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By far the most important and remarkable new plant that has been shown before the Society for many years was placed on exhibition at the March Show by the F. R. Pierson Company of Tarrytown, New York, and was shown under the name of *Nephrolepis Piersoni*. It originated with them as a sport from *N. exaltata Bostoniensis* and is very interesting botanically, as well as of great value commercially. Instead of the fronds being simply pinnate, as in the original form, the pinnæ have become divided making the frond twice pinnate. At the same time the power of indefinite extension of the tips of the fronds, a characteristic peculiar to *Nephrolepis*, seems to have been communicated to the pinnæ, thereby making the fronds of great width and beauty in a well developed plant.

There was also exhibited by L. H. Foster a similar variety of the same plant under the name of *Nephrolepis Fosteriana*. There was the same division of the pinnæ, but while this was noticeable only in the sterile fronds of Pierson's variety, it was confined to the fertile ones only in Foster's, thereby producing a much different effect and less beautiful. The Pierson variety was so remarkably distinct and at the same time of so much commercial value, that we considered the plant worthy of the highest award offered by the Society; we therefore awarded it the Gold Medal. The *N. Fosteriana* was awarded a First Class Certificate of Merit.

At this same exhibition there were several other new and interesting plants, never before shown here, and which received special awards. The most prominent among them was a specimen of the finest species of the so-called yellow callas, *Richardia Pentlandii*, shown by the Harvard Botanic Garden. It is a beautiful plant with a flower of a fine clear yellow color. A First Class Certificate of Merit was awarded for this.

The same award was made to Walter P. Winsor for *Coelogyne pandurata*. Although it is not new to cultivation, it is seldom seen, and, as we believe, was never before shown here. This orchid is one of those plants whose flowers attract more by the beautiful combination of colors displayed by them than by their great brilliancy. The individual flowers are of medium size with the sepals and petals all of a very bright green. The lip is of the same green color with a number of velvety black embossings

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which produce an effect in color which is very seldom seen in flowers and is as beautiful as it is rare.

Honorable Mention was awarded to R. & J. Farquhar & Company for the new *Schizanthus wiestonensis* and to M. H. Walsh for two very pretty new seedling Rambler roses, Fairy Queen and La Fiemetta.

On April 5, Mr. E. O. Orpet, gardener to E. V. R. Thayer, was awarded the Society's Silver Gilt Medal for his seedling hybrid orchids, *Laelio-Cattleya, G. S. Ball*, the result of a cross between *Cattleya Schroederae* and *Laelia cinnabarina*. This cross was made with a view of introducing the brilliant red color of *L. cinnabarina* into the large flowers of the *Cattleya*. The eight plants exhibited illustrated the variation between individuals of identical parentage.

At the May Show, R. & J. Farquhar & Company placed on exhibition their new Rambler rose, named by them the Farquhar Rose. It is a hybrid raised by Jackson Dawson of the Arnold Arboretum, and a cross between *Rosa Wichuraiana* and the Crimson Rambler. It is remarkably free in growth, with bright, shining green leaves, resembling very much the *Wichuraiana*. The flowers are double, somewhat larger than those of the Crimson Rambler, and of a very pleasing shade of salmon-pink. Undoubtedly this is one of the most valuable of this comparatively new class of roses. We considered this well worthy of the Society's Silver Gilt Medal, and we therefore made them this award.

While speaking of this rose another new one, *Dorothy Perkins*, of the rambler class should be mentioned. It was placed on exhibition July 12 by A. T. Story, but the exhibit was too limited to judge correctly of its merits. However, it was sufficient to prove it of great promise and we awarded it Honorable Mention, believing that as the variety develops it will be one of the most valuable of this class. Its seed parent was the same as the Farquhar Rose but of the Hybrid Perpetual variety. Mme. Gabrielle Luizet was used as pollen parent. The flowers are very double, larger than Crimson Rambler, and clear shell-pink in color.

A very fine white variety of *Cattleya Mossiæ*, named *Evelyn Sloane*, was exhibited May 17 by Alfred J. Loveless, gardener to

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John Sloane, Esq., of Lenox, Mass. It was a beautiful flower and was awarded the Society's Silver Medal.

Another very fine *Cattleya* which seems never to have been shown here before is *C. majalis*. It was exhibited May 31 by Edward J. Mitton and received much attention. It was awarded the Bronze Medal.

At the Rhododendron Show, June 7, there were several new plants shown which received special awards. Jason S. Bailey showed the new palm, *Kentia Duckamii*, a promising species for which he was awarded Honorable Mention.

Among orchids there were three new ones all of much beauty; one from Oakes Ames and two from J. E. Rothwell. Mr. Ames' plant was *Cypripedium callosum* var. *Sanderiae* for which he received a Silver Medal. J. E. Rothwell showed the hybrid orchid *Laelio-Cattleya* × *Phœbe* var., and *Cypripedium* × *Mars* for which he was awarded a Silver Medal and a First Class Certificate of Merit respectively.

At the Saturday exhibition, July 5, four new plants were shown, the most important from a commercial point of view, at least, being the hybrid *Richardia* raised by Joseph Tailby & Son. It is the result of a cross between *R. albo-maculata* and *Elliottiana*. The plant retains the habit of the seed parent but is of larger growth. The flower is increased in size and shows also the influence of the pollen parent in color, which is changed from white to light yellow. The foliage retains the silvery spots common to both parents, giving the plant a very brilliant effect, particularly when used for bedding out among sub-tropical plants. We consider this one of the most distinct new plants and worthy of the Society's Silver Medal, which was awarded.

The other three new plants were *Cypripediums*, all of great merit, but the one shown by J. E. Rothwell under the name of *Cypripedium* × *Cowleyanum* (*C. Curtisii* × *niveum*), was particularly interesting. This with *Cypripedium Mahleriae* var. *platytaenium* from Henry T. Clinkaberry were awarded Bronze Medals, while *Cypripedium* × *l'Ansonii* (*C. Morganae* × *C. Rothschildianum*), was awarded a First Class Certificate of Merit.

Another fine hybrid *Cypripedium* was shown by Mr. J. E. Rothwell on Saturday, July 12, under the name of Lord Derby (*C.*

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Rothschildianum × *superbiens*), for which a First Class Certificate of Merit was awarded.

Still another new plant of unusual merit was shown by Mr. M. H. Walsh on July 26. This was a seedling hydrangea to which he has given the name *Superba*. It is the result of a cross between *H. Otaksa* and *H. cyanoclada*. The plant shown was the original one and was a mass of flowers. It seems to be exceedingly free flowering and the flowers range in color from pink to deep blue, resembling in this respect the colors seen in *H. Cyanoclada*. They are very thick and leathery in texture. This plant is particularly interesting for, so far as we can learn, it is the only instance on record where hydrangeas of this class have been raised from seed, and the fact that this was the result of hand fertilization, makes it of still greater interest. We awarded Mr. Walsh the Society's Silver Gilt Medal for this unique plant.

August 23, Mr. J. E. Rothwell brought in another new seedling orchid, *Laelio-Cattleya* × *Edmund Rothwell* (*C. Amethystoglossa* × *L. cinnabarina*), for which he received Honorable Mention. Although this showed little improvement over its parents it was interesting from the fact that it showed no trace of the bright color of the pollen parent but was much the same color as the seed parent, though lacking the spots seen in that species.

August 30, there was an interesting exhibit of American raised seedling orchids from the collection of E. V. R. Thayer, Esq., of Lancaster, Mass. It consisted of twelve plants representing nine distinct crosses, many of which had special merit. At various times during past years exhibits of individual plants and similar collections from this same source have been made, which with this display, make a record far surpassing all others in this line of work; the hybridization of the more difficult species. In recognition of this original work on the part of the gardener, Mr. E. O. Orpet, and the encouragement afforded this important work by Mr. Thayer, we have awarded the Society's Gold Medal. One plant in this exhibit was awarded a First Class Certificate of Merit, it being new to science, as well as possessing much individual beauty. It is the result of a cross between *Laelia tenebrosa* and *Cattleya Gaskelliana alba*, having been named *Laelio-Cattleya* × *Gladys*. The flower is a pleasing shade of lemon-yellow in color with a lip of lilac-rose and prettily veined.

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Mr. Orpet describes the other varieties in the collection as follows:—

"*Laelio-Cattleya* × *Proserpine* (*L. Dayana* × *Cattleya velutina*), a variety with delightful perfume and brightly colored flowers, the two plants shown showing considerable variation in coloring.

Cattleya × *Atalanta* (*C. Leopoldii* × *C. gigas Sanderiana*), a handsome plant bearing a seven-flowered spike of inflorescence, each four and one-half inches across, of a beautiful light rose color, with a suffusion through the petals of a deeper shade. This handsome cross promises well for the future, producing so large a number of blossoms when first flowering.

Cattleya × *Patrocinii* (*C. Harrisonæ* × *C. Leopoldii*); this was interesting as proving the origin of a cattleya sent from Brazil as a new species, but its origin being suspected of a hybrid nature, has been proved by crossing in cultivation the two species as above that occur together in a state of nature. It is also a fine acquisition as a garden plant, the bronze of *C. Leopoldii* being suffused with the rose color of the other parent, the whole flower being four inches across, beautifully spotted, nine of them on one spike.

Cattleya × *interglossa* (*C. intermedia* × *C. amethystoglossa*). A plant was shown carrying two five-flowered spikes of lilac-pink flowers with the spotting of *C. intermedia* on the petals and sepals, and the rich amethyst lip of the other parent. It is a useful variety for producing cut flowers, owing to its free flowering properties and vigor.

Laelio-Cattleya × *C. G. Roebling* (*Cattleya Gaskelliana* × *Laelia purpurata*), a stately and handsomely colored hybrid with flowers eight inches in diameter, sweetly scented, combining the fine features of the two parents to a marked degree.

Laelia × *nigrescens* (*L. pumila* × *L. tenebrosa*); this cross was again shown in two distinct forms from that originally exhibited, a characteristic of this combination of parents being a wide variation.

Laelio-Cattleya × *Bletchleyensis* (*Laelia tenebrosa* × *Cattleya gigas Sanderiana*). This plant showed plainly the value of using as parents in crossing the best obtainable forms of species as subjects to work with, the influence of this distinct type of *C.*

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gigas being plainly discernible in the finely developed lip and its rich coloring of deep bronze-crimson, and the lighter shade of the same color in sepals and petals.

Laelia × *Amœna* (*L. Dayana* × *L. anceps Stella*). Two plants were included in the exhibit, of widely different coloring, one being remarkable for its deep purple-crimson through the whole flower, while in the other form this rich coloring was present only in the lip, making a pleasing contrast to the lighter rose sepals. It is a plant that shows the *L. anceps* plainly in the growth, but the flower stem is reduced from that of the length of *L. anceps* to a height of about twelve inches, while *Laelia Dayana* leaves its impress plainly in the rich coloring of the lip which also has the raised deep purple lines of *L. Dayana*."

At the Annual Exhibition September 11, several new plants were shown, four of them orchids. The most interesting of these being a hybrid zygopetalum, *Z. Roblingianum* (*Z. costratum* × *Z. Gauthierii*), from Henry T. Clinkaberry of Trenton, N. J., who entered this in competition for the best American seedling orchid other than cypripedium. This won the highest prize awarded, a Silver Medal.

The others, all of which were awarded Honorable Mention, were *Laelia grandis tenebrosa*, *Summitosa*, from Lager & Hurrell of Summit, N. J. *Cypripedium Fairy Queen* and *Laelio-Cattleya C. H. Holmes*; *Lelia purpurata* × *Cattleya Schilleriana*, from J. E. Rothwell. Lager & Hurrell also received a First Class Certificate of Merit for a deep colored variety of *Cattleya Hardyana*.

Honorable Mention was also awarded to Jason S. Bailey for a new variety of *Alocasia Wavriniana*, to W. A. Manda, for a new rose, a hybrid between American Beauty and Jersey Beauty, and to D. F. Roy for a seedling canna, *Mrs. E. S. Converse*.

W. A Manda was awarded a Silver Medal for a fine new form of the California privet, *Ligustrum ovalifolium*. It is beautifully variegated with golden yellow and seems to be well fixed. It should make a valuable addition to the shrubs with golden foliage.

Dracœna lantuginosa was shown by Col. Charles Pfaff and awarded a First Class Certificate Merit. It is a fine plant in the way of *D. indivisa*.

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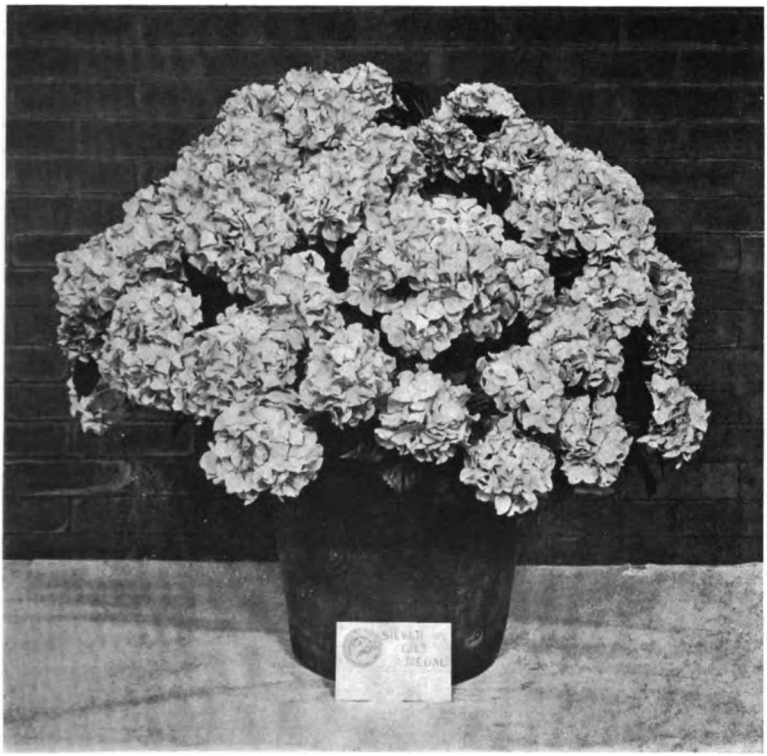

New Seedling Hydrangea "Superba": M. H. Walsh.

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A. F. Estabrook showed a small but well grown plant of the new fern, *Adiantum Charlottæ* for which a First Class Certificate of Merit was awarded. This is one of the most beautiful of the many forms of *A. cuneatum*, much like the variety *gracilimum*, but much stronger and better in habit.

October 4, the Blue Hill Nurseries sent in a new hardy grass, *Arrhenatherum bulbosum variegatum* for which a First Class Certificate of Merit was awarded. It is a very pretty, dwarf grass which should be useful for edgings.

J. E. Rothwell showed a new seedling orchid, *Laelia* × *Oweniana* (*L. Dayana* × *L. xauthina*), for which he received Honorable Mention. He also showed the rare *Cypripedium Sanderianum*, the only true cypripedium with long string-like petals. This is a most difficult subject, but its possibilities for hybridizing purposes are many, and some fine novelties are looked for from this source. We deemed this plant worthy of being awarded the Silver Medal.

There were brought to the Chrysanthemum Show two new orchids, one in competition for the best American raised, seedling orchid. It was *Cattleya* × *Rothwelliæ* (*C. Bowringiana* × *C. Eldorado*) by J. E. Rothwell; this won the third prize, a Bronze Medal. The other was *Cattleya* × *mollis*, shown by James Wheeler. The plant was one of a lot of seedlings raised by E. O. Orpet from *Cattleya Gaskellina* × *C. superba splendens*. It is a beautiful variety and was awarded the Society's Silver Medal.

At various times during the year plants have been exhibited which have shown unusual skill in their cultivation and, although exhibited under the name of the owners, we considered the cultural excellence due to the gardeners who grew them, and have recognized their skill by making cultural awards to them.

The first to be recognized in this way was a plant of *Oncidium Cavendishianum*, on March 8, from Col. Charles Pfaff, and grown by George Melvin, his gardener. The plant was remarkably well grown and showed unusual skill in handling this subject. He was awarded a First Class Certificate of Merit for superior cultivation. He also received the same award for a well-grown plant of *Odontoglossum lœve* on July 5.

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The most remarkable plant that has come under our notice from a cultural point of view was a magnificent basket of *Dendrobium nobile* exhibited by Mrs. John C. Whitin at the Spring Show on March 19. The plant was entered in competition for specimen plant of orchid and won the first prize, but in addition to this we considered it to be so well grown that much honor is due to William McAllister, the gardener, and we therefore awarded him the Society's Silver Medal for superior cultivation, The plant was conceded to be the finest specimen of the kind ever shown before the Society.

Other awards of this nature were, First Class Certificate of Merit awarded to James Garthley, gardener to H. H. Rogers, on April 5, for *Cypripedium villosum*. On May 3, to J. Lawson, gardener to Edward J. Mitton, for a fine plant of *Brassia verrucosa*, carrying fourteen spikes of bloom. To D. F. Roy, gardener to E. S. Converse, on June 19, for a remarkable plant of *Pteris ensiformis* var., *Victoriæ*, showing well how handsome a plant this fern is capable of making under favorable conditions and proper treatment; and to Emil Johansson for a very finely grown *Cypripedium* × *Frau Ida Brandt* var., exhibited on July 5.

At the Rhododendron Show, June 7, Jason S. Bailey made a fine display of calceolaria, Golden Gem, which attracted much attention. We make mention of this, for the shrubby varieties seem to have been overlooked, as exhibition plants, previous to this. That this should not be so seems very evident from the great beauty of the plants shown by Mr. Bailey.

Some unusual features were introduced at the Annual Exhibition, September 11, one of which was the magnificent display of crotons from E. J. Mitton of Brookline, comprising over fifty varieties, many of which were new. The display occupied a prominent place on the main floor and was greatly admired. It was the most extensive display of these plants ever attempted here, and in consideration of this and the fine condition of the plants we awarded Mr. Mitton the Society's Silver Gilt Medal.

Another feature was the display of Miniature Gardens and Dwarfed Japanese Trees from the Yamanaka Company. The dwarfing process practised by the Japanese gardeners was illustrated by the series of trees ranging from the little, one year old

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specimen, to comparatively immense trees of great age. This exhibit formed a striking contrast to the other displays, for on the one hand we had the oriental idea of perfection in the gardener's art and on the other the occidental.

The Chrysanthemum Show brought out some remarkable plants, fully equal to any previously shown. The acme of perfection in trained chrysanthemums seems to have been reached, and we can hope for nothing finer in this style of plants than those exhibited by Jason S. Bailey and Mrs. B. P. Cheney.

We would suggest, however, that as the chrysanthemum lends itself so naturally to decorative effects, that more attention be paid to methods of cultivation which will emphasize this to the best advantage, feeling that the public will be most appreciative of any departure in this direction. We would not encourage this method of culture to the exclusion of the present system, for there is ample room for both, and the skill of the gardener will be taxed to as great an extent to produce the artistically beautiful as it now is to produce the symmetrically beautiful.

Late in November, Mr. Peter Fisher entered with this committee his seedling carnation, *Mrs. Thomas W. Lawson*, in competition for the prospective prize offered by the Society for the best seedling flowering plant. This variety has been under observation for several years and is thoroughly known to us. We can therefore unhesitatingly recommend this plant for the prize as we consider it the most distinct break in carnations that has come to our notice.

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PRIZES AND GRATUITIES AWARDED FOR PLANTS.

1902.

JANUARY 4.

PRIMULA SINENSIS.—Six plants in not less than six-inch pots:
1st, Mrs. J. L. Gardner, $4; 2d, Mrs. B. P. Cheney, $3; 3d, Mrs. B. P. Cheney, $2.

PRIMULA STELLATA.—Six plants in not less than six-inch pots:
1st, C. H. Souther, $3; 2d, Mrs. B. P. Cheney, $2.

PRIMULA OBCONICA HYBRIDS.—Six plants in not less than six-inch pots:
1st, Mrs. B. P. Cheney, $4; 2d, Mrs. B. P. Cheney, $3; 3d, Mrs. J. L. Gardner, $2.

FEBRUARY 8.

FREESIAS.—Six pots or pans:
1st, Col. C. Pfaff, $5.

Gratuities:—

Mrs. J. L. Gardner, *Primula Sinensis alba plena*, $2.
Mrs. B. P. Cheney, Thirteen plants of *Primula obconica*, $6.

SPRING EXHIBITION.

MARCH 19, 20, 21, 22 AND 23.

Theodore Lyman Fund.

INDIAN AZALEAS.—Specimen plant, named:
1st, Dr. C. G. Weld, $8.

BEGONIA GLOIRE DE LORRAINE.—Display:
1st, Mrs. B. P. Cheney, $15.

Society's Prizes.

ERICAS.—Six, not less than three species:
1st, Dr. C. G. Weld, $6.

ORCHID.—Single Plant:
1st, Mrs. J. C. Whitin, *Dendrobium nobile*, $12; 2d, W. P. Winsor, *Dendrobium nobile*, $10; 3d, Mrs. J. L. Gardner, *Phajus grandiflorus*, $6.

STOVE OR GREENHOUSE PLANTS.—Specimen, in bloom, other than Azalea or Orchid:
1st, Mrs. J. L. Gardner, *Acacia heterophylla*, $6; 2d, Dr. C. G. Weld, *Erica melanthera*, $4.

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HARD-WOODED GREENHOUSE PLANTS.—Four, in bloom:
1st, Dr. C. G. Weld, $10.

HARDY FLOWERING DECIDUOUS SHRUBS, FORCED.—Four, of four distinct species, named:
1st, Bussey Institution, $8; 2d, Mrs. J. L. Gardner, $5.

HARDY PRIMROSES.—Twelve plants of distinct varieties:
1st, Dr. C. G. Weld, $6; 2d, Mrs. J. L. Gardner, $4; 3d, Mrs. J. L. Gardner, $2.

HARDY POLYANTHUSES.—Twelve plants of distinct varieties:
1st, Mrs. J. L. Gardner, $6.

CYCLAMENS.—Ten plants:
1st, Mrs. B. P. Cheney, $15; 2d, C. H. Souther, $12; 3d, Mrs. B. P. Cheney, $10.

Ten plants, in not over seven-inch pots:
1st, G. F. Fabyan, $8; 2d, Mrs. B. P. Cheney, $6; 3d, G. F. Fabyan, $4.

Single plant:
1st, C. H. Souther, $5; 2d, Mrs. B. P. Cheney, $4.

CINERARIAS.—Six varieties:
1st, E. J. Mitton, $10; 2d, Mrs. B. P. Cheney, $8; 3d, Mrs. J. L. Gardner, $6; 4th, Dr. C. G. Weld, $5.

Three varieties:
1st, Mrs B. P. Cheney, $6; 2d, Mrs. B. P. Cheney, $5; 3d, Mrs. J. L. Gardner, $4.

Single plant:
1st, Mrs. J. L. Gardner, $3; 2d, E. J. Mitton, $2; 3d, Mrs. B. P. Cheney, $1.

HYACINTHS.—Twelve named varieties, in pots; one in each pot:
1st, Dr. C. G. Weld, $8; 2d, Bussey Institution, $5; 3d, E. S. Converse, $3.

Six named varieties:
1st, E. S. Converse, $5; 2d, Bussey Institution, $4; 3d, Mrs. J. L. Gardner, $3.

Single named bulb:
1st, Bussey Institution, $2; 2d, Mrs. J. L. Gardner, $1.

Three pans, not to exceed twelve inches, ten bulbs of one variety in each:
1st, Dr. C. G. Weld, $6; 2d, Mrs. J. L. Gardner, $4.

Two pans, not to exceed twelve inches, ten bulbs of one variety in each:
1st, Mrs. J. L. Gardner, $4; 2d, Mrs. J. L. Gardner, $3; 3d, Dr. C. G. Weld, $2.

Single pan, not to exceed twelve inches, with ten bulbs of one variety:
1st, Mrs. J. L. Gardner, $3; 2d, Bussey Institution, $2; 3d, Mrs J L. Gardner, $1.

TULIPS.—Six eight-inch pans, nine bulbs of one variety in each:
1st, W. S. Ewell & Son, $6; 2d, W. S. Ewell & Son, $4; 3d, Bussey Institution, $2.

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Three eight-inch pans, nine bulbs of one variety in each:
1st, E. S. Converse, $3; 2d, W. S. Ewell & Son, $2; 3d, Bussey Institution, $1.

Three ten-inch pans, twelve bulbs of one variety in each:
1st, Dr. C. G. Weld, $5; 2d, E. S. Converse, $4; 3d, W. S. Ewell & Son, $3; 4th, W. S. Ewell & Son, $2.

POLYANTHUS NARCISSUS.—Four seven-inch pots, four bulbs in each, distinct varieties:
1st, Dr. C. G. Weld, $4.

JONQUILS.—Six pots or pans, not exceeding eight inches, the number of bulbs in each to be at the discretion of the grower:
1st, Dr. C. G. Weld, $4; 2d, W. S. Ewell & Son, $3; 3d, W. S. Ewell & Son, $2.

NARCISSUSES.—Six eight-inch pans, distinct varieties, single or double:
1st, Dr. C. G. Weld, $6; 2d, W. S. Ewell & Son, $4.

Three eight-inch pans:
1st, W. S. Ewell & Son, $3; 2d, Dr. C. G. Weld, $2.

LILY OF THE VALLEY.—Six pots or pans, not exceeding eight inches:
1st, Bussey Institution, $4; 2d, W. S. Ewell & Son, $3; 3d, P. B Bradley, $2.

CROCUSES.—Three boxes, each eight by twenty inches, three distinct varieties:
1st, Bussey Institution, $3; 2d, W. S. Ewell & Son, $2; 3d, Bussey Institution, $1.

IXIAS.—Six pots or pans, in varieties:
1st, Dr. C. G. Weld, $5.

TRITONIAS.—Six pots or pans, in varieties:
1st, Dr. C. G. Weld, $5.

ROMAN HYACINTHS.—Six eight-inch pans, ten bulbs in a pan:
1st, Dr. C. G. Weld, $4; 2d, W. S. Ewell & Son, $2; 3d, Bussey Institution, $1.

GENERAL DISPLAY OF SPRING BULBS AND PLANTS:—All classes:
1st, Bussey Institution, $30; 2d, W. S. Ewell & Son, $20.

Gratuities:—

N. F. Comley, Azalea, $1.

E. E Riley, Hybrid Primulas, $2.

R. & J. Farquhar & Co., Display of Bays, Palms, and Cyclamen, $35.

Harvard Botanic Garden, Display of Cyclamen, *Primula obconica*, *Cœlogyne*, and *Lachenalias*, $25.

J. S. Bailey, Display of Palms, Cinerarias, Cyclamens, etc., $25.

Bussey Institution, Forced Hardy Herbaceous Plants and Shrubs, $10.

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MAY 10.

CALCEOLARIAS.—Six varieties, in pots:
1st, Mrs. B. P. Cheney, $10; 2d, G. F. Fabyan, $8; 3d, Mrs. B. P. Cheney, $6.
Single plant:
1st, Mrs. B. P. Cheney, $3; 2d, G. F. Fabyan, $2.

Gratuities:—

J. E. Rothwell, Display of Orchids, $12.
J. E. Little, *Phyllocactus speciosa rosea*, $1.

RHODODENDRON EXHIBITION.

JUNE 7 (*Changed from June 6, 7 and 8*)

ORCHIDS.—Display, arranged for effect, with foliage plants, in a space eight feet by five feet:
1st, J. S. Bailey, $30; 2d, J. E. Rothwell, $25.

Gratuities:—

E. J. Mitton, Display of Pelargoniums, $10.
J. S. Bailey, Display of Shrubby Calceolaria Golden Gem, $5.
J. L. Little, *Campanula Medium calycanthema*, $2.

ROSE AND STRAWBERRY EXHIBITION.

JUNE 19 AND 20 (*Changed from June 24 and 25*).

DECORATIVE PLANTS.—Group, named, arranged for effect, covering one hundred and fifty square feet:
1st, Mrs. J. L. Gardner, $30; 2d, E. S. Converse, $25.
GLOXINIAS.—Six plants in not less than eight-inch pots:
1st, J. L. Little, $10; 2d, Mrs. J. L. Gardner, $6; 3d, Mrs. J. L. Gardner, $3.
ORCHIDS.—Six plants, of six named varieties, in bloom:
1st, J. E. Rothwell, $15.
Three plants, of three named varieties, in bloom:
1st, E. J. Mitton, $10; 2d, J. E. Rothwell, $8.
Single specimen, named, in bloom:
1st, H. A. Wheeler, $5; 2d, J. E. Rothwell, $3.

Gratuities:—

E. S. Converse, Tuberous Begonias, $8.
A. F. Estabrook, Display, $5.

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JULY 5.

Gratuity:—

E. J. Mitton, *Oncidium incurvum* and *Cattleya Gaskelliana*, $2.

AUGUST 9.

Gratuity:—

E. J. Mitton, *Cattleya Dowiana chrysotoxa* and *C. Gaskelliana*, $2.

AUGUST 16.

Gratuities:—

J. E. Rothwell, Collection of Cypripediums, $8.
E. J. Mitton, *Oncidium papilio*, $1.

ANNUAL EXHIBITION OF PLANTS AND FLOWERS.

SEPTEMBER 11, 12, 13 AND 14.

PALMS.—Pair, in pots or tubs not less than eighteen inches in diameter:
1st, J. S. Bailey, $12; 2d, Mrs. J. L. Gardner, $8.
Pair, in pots or tubs not more than fourteen inches in diameter:
1st, J. S. Bailey, $8; 2d, A. F. Estabrook, $6.

GREENHOUSE PLANTS.—Best finished group containing foliage plants of all descriptions, arranged for effect, covering two hundred square feet:
1st, J. S. Bailey, $50; 2d, Mrs. J. L. Gardner, $35; 3d, E. S. Converse, $25.
Six Greenhouse and Stove plants, decorative specimens of different named varieties, two crotons admissible:
1st, J. S. Bailey, $25; 2d, Mrs. J. L. Gardner, $20; 3d, E. S. Converse, $15.

CENTRE PIECE FOR TABLE. — For fifteen covers, living plants, in one receptacle:
1st, J. E. Rothwell, $10; 2d, E. J. Mitton, $8.

FERNS.—Five named varieties, no Adiantums admissible:
1st, E. S. Converse, $10; 2d, A. F. Estabrook, $6.
Specimen, other than Tree Fern:
1st, J. S. Bailey, $4; 2d, A. F. Estabrook, $3.

ADIANTUMS.—Five named varieties:
2d, A. F. Estabrook, $5.

DRACÆNAS.—Six named varieties:
1st, J. S Bailey, $8; 2d, Mrs. J. L. Gardner, $5.

CROTONS.—Twenty-five plants, not less than eighteen named varieties, in not less than six-inch pots:
1st, J. S. Bailey, $12; 2d, Mrs. J. L. Gardner, $8.

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BEGONIA REX.—Ten pots of ten named varieties:
1st, E. S. Converse, $10; 2d, E. J. Mitton, $8; 3d, Mrs. J. L. Gardner, $6.

OUVIRANDRA FENESTRALIS.—1st, Mrs. J. L. Gardner, $6; 2d, E. S. Converse, $4.

Gratuities:—

J. E. Rothwell, Collection of Orchids, $10.
Lager & Hurrell, " " " $8.
E. J. Mitton, " " " $2.
C. H. Souther, Display of Platyceriums, $4.
Dr. A. H. Flower, *Nephrolepis exaltata*, $2.
R. & J. Farquhar & Co., Display of Foliage Plants, $20.
W. H. Lincoln, Group of Foliage Plants, $12.
Mrs. J. L. Gardner, Display of Flowering Plants, $5.
A. F. Estabrook, Bambusa, $2.
Yamanaka & Co., Display of Miniature Gardens and Dwarf Japanese Trees, $30.

CHRYSANTHEMUM SHOW.

NOVEMBER 6, 7, 8 AND 9.

CHRYSANTHEMUMS.—Display of eight named plants, any or all classes, named varieties:
1st, J. S. Bailey, $60; 2d, Mrs. B. P. Cheney, $45; 3d, E. S. Converse, $35.

Display of ten named plants, any or all classes, distinct varieties, in not exceeding nine-inch pots of ordinary form.
1st, W. Hunnewell, $35; 2d, E. S. Converse, $25.

Three Japanese Incurved:
1st, Mrs. B. P. Cheney, $12.

Three Reflexed; distinct named varieties:
1st, Mrs. B. P. Cheney, $12; 2d, E. S. Converse, $10.

Specimen Japanese Incurved; named variety:
1st, J. S. Bailey, $6; 2d, E. W. Converse, $5; 3d, J. S. Bailey, $4.

Specimen Reflexed, named variety:
1st, Mrs. B. P. Cheney, $6; 2d, E. S. Converse, $5; 3d, W. Hunnewell, $4.

Specimen Anemone Flowered, named variety:
1st, J. S. Bailey, $6; 2d, H. H. Rogers, $5; 3d, E. S. Converse, $4.

Specimen Pompon, named variety:
1st, E. S. Converse, $4.

Twelve plants, of twelve different varieties, grown to one stem and bloom, in not over six-inch pots, preference being given to plants not more than three feet in height:
1st, E. A. Clark, $8; 2d, E. S. Converse, $6.

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Six plants grown as above, but all of one color, Red:
1st, E. A. Clark, $4; 2d, E. A. Clark, $3; 3d, E. S. Converse, $2.
White:
1st, E. A. Clark, $4; 2d, E. S. Converse, $3.
Pink:
1st, E. A. Clark, $4; 2d, E. S. Converse, $3.
Yellow:
1st, E. A. Clark. $4; 2d, E. A. Clark, $3; 3d, E. S. Converse, $2.
Any other color:
1st, E. A. Clark, $4; 2d, E. S. Converse, $3.
Group of Chrysanthemums, arranged for effect, with palms and decorative foliaged plants, limited to one hundred square feet:
1st, Mrs. J. L. Gardner, $25.

Gratuities:—

E. S. Converse, Standard Chrysanthemums, twelve plants, $18.
W. Hunnewell, Display of Chrysanthemums, $6.
E. W. Converse, Chrysanthemum Pink Ivory, $2.
L. H. Foster, Display of *Nephrolepis Anna Foster*, $5.
F. R. Pierson & Co., *Nephrolepis Piersoni*, $5.
W. Hunnewell, *Salvia leucantha*, $3.
Mrs. J. L. Gardner, Seedling Asparagus, $3.
Lager & Hurrell, Display of Orchids, $20.
W. Hunnewell, Display of *Oncidium ornithorhynchum*, $5.
R. & J. Farquhar & Co., Display of Palms, Bay Trees, Araucarias, etc., $30.

SOCIETY'S GOLD MEDALS.

Spring Exhibition, March 19–23. F. R. Pierson & Co., for *Nephrolepis Piersoni*.
August 30. E. V. R. Thayer, for American Raised Seedling Orchids.

SOCIETY'S SILVER GILT MEDALS.

April 5. E. O. Orpet, for *Lælio-Cattleya*, G. S. Ball.
May 10. R. & J. Farquhar & Co., for The Farquhar Rose.
July 26. M. H. Walsh, for Seedling *Hydrangea superba*.
Annual Exhibition of Plants and Flowers, September 11–14. E. J. Mitton, for Display of Crotons.

SOCIETY'S SILVER MEDALS.

March 1. H. H. Rogers, for *Saxifraga sarmentosa tricolor superba*.
" " H. H. Hunnewell, for *Odontoglossum Midgleyanum*.
Spring Exhibition, March 19–23. W. McAllister, for Superior cultivation of *Dendrobium nobile*.

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May 17. A. J. Loveless, for *Cattleya Mossiæ* var. *Evelyn Sloane.*

Rhododendron Exhibition, June 7. O. Ames, for *Cypripedium callosum* var. *Sanderæ.*

" " " " J. E. Rothwell, for *Lælio-Cattleya* × *Phœbe* var.

July 5. J. Tailby & Son, for Seedling *Richardia.*

Annual Exhibition of Plants and Flowers, September 11–14. W. A. Manda, for Golden variegated Privet.

Annual Exhibition of Plants and Flowers, September 11–14. H. T. Clinkaberry, for *Zygopetalum* × *Rœblingianum.*

October Exhibition of Fruits and Vegetables, October 3 and 4. J. E. Rothwell, for *Cypripedium Sanderianum.*

Chrysanthemum Show, November 6–9. J. Wheeler, for *Cattleya mollis.*

SOCIETY'S BRONZE MEDALS.

May 31. E. J. Mitton, for *Lælia majalis.*

July 5. J. E. Rothwell, for *Cypripedium Cowleyanum.*

" " H. T. Clinkaberry, for *Cypripedium Mahlerœ.*

Chrysanthemum Show, November 6–9. J E. Rothwell, for *Cattleya Rothwelliæ.*

FIRST CLASS CERTIFICATES OF MERIT.

March 1. J. E. Rothwell, for *Cypripedium Edmund Rothwell.*

" 8. G. Melvin, for Superior cultivation of *Oncidium Cavendishianum.*

Spring Exhibition, March 19–23. L. H. Foster, for *Nephrolepis Fosteriana.*

" " " " Harvard Botanic Garden, for *Richardia Pentlandii.*

" " " " W. P. Winsor, for *Cœlogyne pandurata.*

April 5. J. Garthley, for Superior cultivation of *Cypripedium villosum.*

May 3. J. Lawson, for Superior cultivation of *Brassia verrucosa.*

Rhododendron Exhibition, June 7. J. E. Rothwell, for *Cypripedium Mars.*

Rose and Strawberry Exhibition, June 19 and 20. D. F. Roy, for Superior cultivation of *Pteris ensiformis* var. *Victoriæ.*

July 5. E. Johansson, for Superior cultivation of *Cypripedium* × *Frau Ida Braudt* var.

" " O. Ames, for *Cypripedium l'Ansoni.*

" " G. Melvin, for Superior cultivation of *Odontoglossum læve.*

" 12. J. E. Rothwell, for *Cypripedium* × *Lord Derby.*

August 30. E. O. Orpet, for *Lælio-Cattleya Gladys.*

Annual Exhibition of Plants and Flowers, September 11-14.

Col. C. Pfaff, for *Dracæna lantuginosa.*

Lager & Hurrell, for *Cattleya Hardyana,* deep colored variety.

A. F. Estabrook, for *Adiantum Charlottæ.*

October Exhibition of Fruits and Vegetables, October 3 and 4. Blue Hill Nurseries, for *Arrhenatherum bulbosum variegatum.*

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HONORABLE MENTION.

Spring Exhibition, March 19–23.

R. & J. Farquhar & Co., for *Schizanthus Wiestoniensis.*

M. H. Walsh, for Seedling Rambler Rose Fairy Queen.

M. H. Walsh, for Seedling Rambler Rose *La Fiemetta.*

Rhododendron Exhibition, June 7. J. S. Bailey, for *Kentia Duckhamii.*

July 12. A. T. Story, for Rambler Rose Dorothy Perkins.

August 23. J. E. Rothwell, for *Lælio-Cattleya* × *Edmund Rothwell.*

Annual Exhibition of Plants and Flowers, September 11-14.

Lager & Hurrell, for *Lelia grandis tenebrosa Summitosa.*

J. E. Rothwell, *Cypripedium Fairy Queen.*

J. S. Bailey, *Alocasia Warruiana.*

W. A Manda, New Hybrid Rose.

J. E. Rothwell, *Lælio-Cattleya* C. H. Holmes.

D. F. Roy, Seedling Canna, Mrs. E. S. Converse.

October Exhibition of Fruits and Vegetables, October 3 and 4. J. E. Rothwell, for *Lælia* × *Orceniana.*

Amount appropriated for prizes and gratuities for 1901		$2,000 00
Amount awarded for prizes and gratuities	$1,659 00	
Estimate cost of medals awarded	270 00	1,929 00
Leaving an unexpended balance of		$71 00

ARTHUR H. FEWKES,
JAMES WHEELER,
WILLIAM J. MARTIN,
ROBERT CAMERON,
ROBERT MELROSE GREY,
Committee on Plants.

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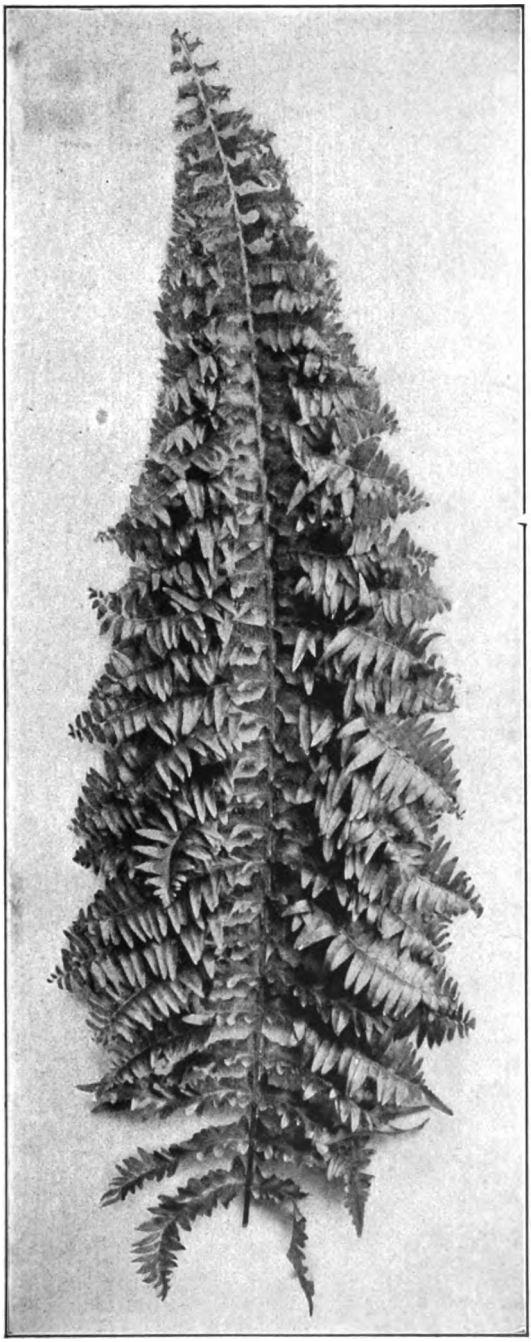

Frond of the Pierson Fern.

Courtesy of the F. R. Pierson Company.

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REPORT

OF THE

COMMITTEE ON FLOWERS

FOR THE YEAR 1902.

By J. WOODWARD MANNING, CHAIRMAN.

Your committee would report that the exhibits of the present year have been of a high standard and indicative of that renewal and increase in interest that was hoped for when the project of a new exhibition hall was undertaken. The quality of the exhibits has been good, the method of exhibition has neither improved nor deteriorated, the objectionable features of an unsatisfactory color scheme of walls has been a continued drawback to showing exhibits to the best advantage, but we hope that there may be a means to remove this objection in the near future.

The distance of the hall from the business section of the city has prevented a continuous and satisfactory attendance of a majority of the committee at the various meetings, and has caused changes by resignation and otherwise of members of this body. This is a matter which will regulate itself in time, but which has caused, during the present year, an unequal burden of work on the few members who were able to attend.

Death has removed from the membership of the Flower Committee Mr. James Comley, who has served many years on this and other committees, and who, by his constant attendance up to within a few weeks of his death, has been a most valued and conscientious member. His exhibits had been of such unusual extent and of such high character that the loss of the same to the Society

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has been very noticeable, but aside from this the committee has met a severe loss by his death in losing the value of his wide knowledge and experience as a judge.

The attendance at the exhibitions has been largely augmented and commences to prove the wisdom of a change of location of the hall; the character of the attendance is changed somewhat, as would be expected, but while we miss some faces of flower-lovers that we have cause to regret, there is, on the other hand, nothing to regret in the personnel of our present visitors.

To review the exhibits in a general way, special mention should be made of the following:—

The exhibitions of Orchids on February 8 and at later dates have proved most attractive, and included many rare and interesting forms. Probably no class of exhibits attract greater interest, though the general knowledge of the plants is less extended than among other classes. The coterie of orchid experts in this vicinity is such as to insure a good exhibition whenever a fair prize is offered, and many unique and noteworthy forms are shown at times in variety and quantity probably unequaled in the United States.

Your committee is in favor of extended inducement in drawing out added competition in this class.

At the exhibition of February 8, Mrs. John L. Gardner gained first and Col. Charles Pfaff second prizes for two notable exhibits, and other notable collections were shown during the year.

The Spring Exhibition had many fine entries in Roses, Carnations, and Violets, of which the carnations showed the greatest advancement in the quality of the flowers, both from the standpoint of distinction in varieties and in the skill shown in culture. The advantage of showing carnations for a less period of the Spring Exhibition than formerly was made apparent by the increased freshness of the exhibition, under the new exhibition rules. Mr. M. H. Walsh of Wood's Hole was awarded Honorable Mention for a new seedling Rambler rose named "Miss Simplicity."

The Peony contests in June were spirited, and brought out a fine exhibit both in quality and variety. The Kelway Silver Gilt Medal for a collection of eighteen named varieties was awarded

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to Arthur H. Fewkes, and the second prize of the Kelway Bronze Medal was gained by George Hollis. Other notable exhibits of peonies were shown, among which could be mentioned those of T. C. Thurlow, Joseph H. White, Mrs. John L. Gardner, Mrs. E. M. Gill, and A. F. Estabrook as competitors. George Hollis was awarded a First Class Certificate for peony "Maud L. Richardson," and Honorable Mention for peony "Goliath," and entered the latter for the Prospective Prize.

The Rhododendron Show, though suffering a loss of two prominent exhibitors of former years, still proved one of the noteworthy exhibits of the year, and while competition among the classes was less than previously, yet the general displays were well staged and abundant. During this exhibition was shown a notable collection of German iris by Frederick J. Rea, to whom a First Class Certificate was awarded for same.

The Rose and Strawberry Exhibition of June 19 and 20 recalled something of the successful exhibits of former years; a pleasant relief after two unfavorable years for Rose shows. The competition was close, and in many respects the character and variety of the exhibition have not been exceeded in former years. New competitors have entered the field, showing a healthy interest and future for Rose exhibitions to come. Other notable exhibits of this show were that of a new hardy herbaceous perennial *Campanula Persicifolia*, var. *Moerheimii*, a fine white, very double variety of the peach-leaved harebell, shown by Frederick J. Rea, and a large vase each of superbly grown foxgloves and delphiniums, shown by Mrs. John L. Gardner.

Never have Japanese irises been shown to greater advantage than at the exhibition of July 5. The high culture, great variety, and quality of the flowers showed what this class is capable of as a decorative, hardy plant. Hardy herbaceous perennials were exhibited from this date through the balance of the season, and while the restrictions limited the number of bottles in a display, the quality and variety shown were satisfactory in every way.

Special prizes were awarded at this exhibition for noteworthy exhibits in Honorable Mentions to Frederick J. Rea for the new Hybrid Wichuraiana rose "Dorothy Perkins," and to H. A. Wheeler for the Shasta daisy, and a First Class Certificate to

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Arthur H. Brigham, of Weston, for a display of a fine white variety of *Cypripedium spectabile*.

From July 19 to the end of the season, hardy perennial phloxes were notable for the size and quality of the exhibits, the perfection of truss and habit, and the size and color of the individual flowers. It is a class that forms as valuable an adjunct to the hardy flower-border as the peony, and at a season which enables each to be appreciated without rivalry.

Dahlias were first exhibited on July 19, and from that time to the Chrysanthemum Show enlivened the hall with their wealth of color and form. Previous reports have indicated the trend of popularity to this flower, and this season's exhibitions have reiterated the popularity and decorative value of the class. A notable break in type was shown in an exhibit by R. & J. Farquhar & Company, known as the "collerette class," in the example of the variety, President Viger, for which a First Class Certificate was awarded. The Dahlia Show of the Annual Exhibition was finely staged by a goodly number of exhibitors, and was a success in every way.

Gladioli has been another class in which continued improvement in variety and form of flowers has been apparent, and the collection of F. A. Blake of the Gandevensis type of hybrids has been good, while that of Arthur Cowee, of Berlin, New York, has contained many fine forms of both the Gandevensis and Lemoinei type of hybrids. Mr. Cowee's collection was awarded two Honorable Mentions.

Aquatics, though not shown in the great variety of families that have appeared in exhibitions of former years, have been well represented, by the *Nymphæas* of which Henry A. Dreer, of Philadelphia, exhibited a notable collection on September 12, among which a First Class Certificate was awarded to the variety "Mrs. C. M. Ward," and Honorable Mention was made to the same party for the variety "Philadelphia."

Chrysanthemums were never shown in greater variety and in better quality than in 1902. The halls were all well filled, the competition was close, and the high standard of former years was fully maintained. The public interest in the exhibition was good, and the culminating flower show of the year gave promise in

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quality, competition, and public interest to encourage continued effort to make the exhibits of the Massachusetts Horticultural Society a standard for the country.

Some notable exhibits of new carnations and roses were shown at the Chrysanthemum Show, for which Peter Fisher of Ellis was awarded a Silver Medal for carnation "Enchantress"; A. Roper, a Silver Medal for carnation "Fair Maid"; a Silver Medal to E. G. Asmus, of West Hoboken, N. J., for the new yellow rose, "F. Deegen," the so-called "Twentieth Century" rose; and an Honorable Mention to the H. Dale Estate of Brampton, Canada, for the rose "Canadian Queen." A First Class Certificate was also awarded to Walter Hunnewell for a new unnamed sport from the Oriental Glory chrysanthemum.

Your committee was granted an appropriation of $2,500 for the year 1902. They have awarded in cash prizes $1,798, leaving a balance of $702, out of which must be deducted the cost of the additional awards of four Silver Gilt Medals, seven Silver Medals, one Bronze Medal, six First Class Certificates, and eleven Honorable Mentions.

The following awards have been made during the year:—

PRIZES AND GRATUITIES AWARDED FOR FLOWERS.

1902.

JANUARY 4.

FREESIAS.—Vase of fifty spikes:
1st, Mrs. E. M. Gill, $2.
General Display.—Arranged for effect, in space of twelve or more square feet:
1st, Mrs. E. M. Gill, $2.
PRIMULA SINENSIS.—Display of fifty or more individual blooms:
1st, Mrs. E. M. Gill, $2; 2d, Mrs. J. L. Gardner, $1.

FEBRUARY 8.

CARNATIONS.—Display of cut blooms, with foliage, not less than six varieties in vases:
1st, M. A. Patten, $8; 2d, M. A. Patten, $6.

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CAMELLIAS.—Display of named varieties, cut flowers with foliage, not less than twelve blooms, in not less than six varieties:
1st, Mrs. J. L. Gardner, $4.

Gratuities:—

A. Roper, Vase of Carnations, Fair Maid, $3.
Miss H. B. Winter, Carnations, $1.
Mrs. E. M. Gill, Cut Flowers, $2.

MARCH 1.

General Display.—Arranged for effect, in space of thirty or more square feet:
2d, Miss H. B. Winter, $4.
General Display.—Arranged for effect, in space of twelve or more square feet:
2d, Miss H. B. Winter, $1.

Gratuity:—

Mrs. E. M. Gill, Cut Flowers, $1.

SPRING EXHIBITION.

MARCH 19, 20, 21, 22 AND 23.

HYBRID PERPETUAL ROSES.—Twelve blooms, in not less than four named varieties:
1st, Col. C. Pfaff, $10.
Six blooms, not less than three named varieties:
1st, Col. C. Pfaff, $5.
Twelve blooms of Ulrich Brunner:
1st, Col. C. Pfaff, $10.
TENDER ROSES, IN VASES.—Twenty-five blooms of the Bride:
1st, J. Pritchard, $10.
Twenty-five blooms of Bridesmaid:
1st, J. Pritchard, $10.
Twenty-five blooms of Liberty:
1st, Waban Rose Conservatories, $12.
Twenty-five blooms of any other variety:
1st, Waban Rose Conservatories, $8.
CARNATIONS.—Vase of one hundred cut blooms, with foliage, not less than six varieties:
1st, J. S. Bailey, $8; 2d, P. B. Bradley, $6.
Twenty-five blooms of any named Crimson variety:
1st, M. A. Patten, $3.

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Twenty-five blooms of any named Dark Pink variety:
1st, M. A. Patten, $3; 2d, J. H. White, $2.
Twenty-five blooms of any named Light Pink variety:
1st, M. A. Patten, $3; 2d, M. A. Patten, $2.
Twenty-five blooms of any named White variety:
1st, M. A. Patten, $3; 2d, M. A. Patten, $2.
Twenty-five blooms of any named White Variegated variety:
1st, M. A. Patten, $3.

VIOLETS.—Bunch of one hundred blooms of Lady Hume Campbell:
1st, N. F. Comley, $3; 2d, Col. C. Pfaff, $2.
Bunch of one hundred blooms of Marie Louise:
1st, N. F. Comley, $3.
Bunch of one hundred blooms of any other double variety:
1st, N. F. Comley $3; 2d, N. F. Comley, $2.
Bunch of one hundred blooms of any single variety:
1st, W. Simms, $3; 2d, N. F. Comley, $2.

Gratuities:—

Col. C. Pfaff, Display of Roses, $12.
Miss E. J. Clark, Vase of Carnations, $2.
Col. C. Pfaff, Display of Orchids, $5.
N. F. Comley, Display of Camellias, $4.
J. H. White, Polyanthus, $2.
Mrs. E. M. Gill, Display, $4.

APRIL 5.

General Display.—Arranged for effect, in space of thirty or more square feet:
1st, J. S. Bailey, $6; 2d, Mrs. E. M. Gill, $4.
General Display.—Arranged for effect, in space of twelve or more square feet:
1st, H. H. Rogers, $2; 2d, H. H. Rogers, $1.

MAY 10.

TULIPS.—Forty-eight blooms, not less than twelve named varieties:
1st, Dr. C. G. Weld, $4.

PANSIES.—Forty-eight blooms, not less than four varieties:
2d, Mrs. E. M. Gill, $4.
Gratuity:—
Mrs. E. M. Gill, Display of Cut Flowers, $3.

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RHODODENDRON EXHIBITION.

JUNE 7. (*Changed from June 6, 7 and 8.*)

H. H. Hunnewell Fund.

RHODODENDRONS.—Twelve distinct varieties of unquestioned hardiness, named:
1st, Mrs. J. L. Gardner, $20.
Six distinct varieties of unquestioned hardiness, named:
1st, Mrs. B. P. Cheney, $10.
Six tender varieties, named:
2d, Mrs. J. L. Gardner, $4.
Three tender varieties, named:
1st, Mrs. J. L. Gardner, $4.
HARDY AZALEAS.—Six varieties, one vase of each:
1st, Mrs. J. L. Gardner, $3.
Cluster of trusses, one variety:
2d, Mrs. J. L. Gardner, $1.

Society's Prizes.

GERMAN IRISES.—Thirty-six vases of three trusses each, of not less than twelve varieties:
1st, Mrs. J. L. Gardner, $4.
HARDY PYRETHRUMS.—Display of thirty bottles, Single and Double, six or more varieties:
1st, A. McLaren, $6; 2d, W. J. Clemson, $4.
Vase of Flowers:
1st, Mrs. E. M. Gill, $4; 2d, Miss H. B. Winter, $3.

Gratuities:—

Mrs. B. P. Cheney, Display of Rhododendrons, $30.
Mrs. J. L. Gardner, " " " $12.
Hon. E. S. Converse, " " " $8.
W. J. Clemson, Vase of Pæonies, $5,
A. H. Fewkes, Display of Pæonies, $4.
C. W. Parker, Vase of *Iris pallida Dalmatica*, $1
W. H. Heustis & Son, *Kalmia latifolia*, $1.
Mrs. H. L. Higginson, Vase of *Clematis montana*, $1.
Blue Hill Nurseries, Hardy Perennials, $5.
J. S. Chase, Display, $2.
Mrs. E. M. Gill, Display, $2.

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PÆONY EXHIBITION.

JUNE 14.

HERBACEOUS PEONIES.—Collection of thirty or more named varieties, Double:
1st, T. C. Thurlow, $12; 2d, G. Hollis, $10.
Collection of twelve or more named varieties:
1st, T. C. Thurlow, $6.
Specimen Bloom:
1st, J. H. White, $2; 2d, G. Hollis, $1.
Vase of blooms on long stems, arranged for effect in the Society's large China vases:
1st, Mrs. J. L. Gardner, $10; 2d, G. Hollis, $8; 3d, Mrs. E. M. Gill, $6; 4th, A. F. Estabrook, $4.
FOXGLOVES.—Twelve spikes:
1st, Mrs. J. L. Gardner, $3; 2d, Mrs. J. L. Gardner, $2; 3d, W. Whitman, $1.

Gratuities:—

O. B. Hadwen, Display of Pæonies, $5.
J. S. Chase, " " " $2.
Mrs. J. L. Gardner, Foxgloves, $2.
W. Whitman, " $1.
F. J. Rea, *Campanula persicifolia grandiflora*, $3.
Mrs. J. L. Gardner, Sweet Williams, $2.
Mrs. J. B. Lawrence, Lychnis, $1.
Dr. O. S. Paige, Pansies, $1.
Dr. O. S. Paige, Display of Roses, $2.
W. J. Clemson, Display of Roses and Gloxinias, $10.
Mrs. E. M. Gill, Display, $3.
Mrs. J. B. Lawrence, Display, $2.

ROSE AND STRAWBERRY EXHIBITION.

JUNE 19 AND 20. (*Changed from June 24 and 25.*)

Theodore Lyman Fund.

HARDY ROSES.—Twenty-four distinct named varieties:
1st, J. H. White, $25; 2d, Miss E. J. Clark, $20.

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Society's Prizes.

Sixteen named varieties, three of each variety:
1st, Dr. O. S. Paige, $15; 2d, Miss E. J. Clark, $10.

Twelve named varieties, three of each:
1st, A. F. Estabrook, $10.

Three named varieties, three of each:
1st, J. H. White, $3; 2d, Miss E. J. Clark, $2.

Twenty-four named varieties, one of each:
1st, Dr. O. S. Paige, $10.

Eighteen named varieties, one of each:
1st, J. H. White, $8; 2d, Miss E. J. Clark, $6; 3d, Mrs. J. L. Gardner, $4.

Twelve named varieties, one of each:
1st, Miss E. J. Clark, $6; 2d, J. H. White, $4.

Six named varieties, one of each:
1st, J. H. White, $4; 2d, Miss E. J. Clark, $3.

Twenty-four blooms of Mme. Gabriel Luizet:
1st, Miss E. J. Clark, $8; 2d, P. B. Bradley, $6; 3d, A. F. Estabrook, $4.

Six blooms of Baroness Rothschild:
1st, P. B. Bradley, $3; 2d, Dr. O. S. Paige, $2.

Six blooms of any other variety:
1st, P. B. Bradley, $4; 2d, A. F. Estabrook, $3; 3d, P. B. Bradley, $2; 4th, E. S. Converse, $1.

Best single bloom of any variety:
1st, P. B. Bradley, $2: 2d, Dr. O. S. Paige, $1.

General Display.—One hundred bottles of Hardy Roses, in the Society's racks, buds admissible;
1st, Mrs. E. M. Gill, $10; 2d, W. J. Clemson, $9; 3d, Dr. O. S. Paige, $8; 4th, Mrs. J. L. Gardner, $7; 5th, Miss E. J. Clark, $6; 6th, P. B. Bradley, $5.

Sweet Williams.—Display, eighteen vases of three trusses each, not less than six varieties:
1st, W. J. Clemson, $4; 2d, Mrs. J. L. Gardner, $3; 3d, W. E. Coburn, $2.

Vase of Flowers.—Best arranged:
1st, Mrs. E. M. Gill, $5; 2d, Miss H. B. Winter, $4.

Basket of Roses.—Arranged for effect:
1st, Mrs. E. M. Gill, $5.

Gratuities:—

Mrs. J. L. Gardner, Display of Roses, $4.
Mrs. E. M. Gill, Display of Roses, $4.
Mrs. E. A. Wilkie, Display of Roses and Nymphæas, $2.

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W. J. Clemson, Sweet Williams, $2.
Mrs. J. L. Gardner, Display of Sweet Williams, $2.
G. Hollis, Display of Seedling Pæonies, $5.
J. S. Chase, Vase of Pæonies, $4.
Mrs. E. M. Gill, Vase of Pæonies, $2.
Mrs. J. L. Gardner, Vase of Foxgloves, $4.
Mrs. J. L. Gardner, Vase of Delphiniums, $3.
H. A. Wheeler, *Amaryllis Formosissima*, $1.
J. H. White, Collection, $2.

JULY 5. (*Changed from July 12.*)

IRIS KÆMPFERI.—Fifteen varieties, three of each:
1st, Mrs. J. L. Gardner, $6; 2d, T. C. Thurlow, $4.
Six varieties, three of each, in vases:
1st, Mrs. J. L. Gardner, $3; 2d, Mrs. J. L. Gardner $2.
SWEET WILLIAMS.—Auricula flowered, thirty spikes, of not less than six distinct varieties:
2d, W. J. Clemson, $2.
DELPHINIUMS.—Collection of twenty spikes, not less than five varieties:
1st, Mrs. J. L. Gardner, $5; 2d, C. Blomberg, $4.
Display, thirty vases, of three spikes each:
1st, Mrs. J. L. Gardner, $10.
HARDY HERBACEOUS FLOWERS.—Thirty bottles:
1st, Blue Hill Nurseries, $6; 2d, W. J. Clemson, $5.
VASE OF FLOWERS.—1st, Mrs. E. M. Gill, $4; 2d, Miss H. B. Winter, $3.

Gratuities:—

F. J. Rea, Display of Crimson Rambler Rose, $3.
W. J. Clemson, Sweet Peas, $3.
L. H Atkins, Shirley Poppies, $2.
W. J. Clemson, Collection of flowers, $3.
C Blomberg, " " " $1.
Mrs. E. M. Gill, Display, $2.

JULY 12. (*Changed from July 19.*)

HOLLYHOCKS.—Best display, single and double varieties, in flat dishes:
1st, E. L. Lewis, $5; 2d, J. S. Chase, $4.
SHIRLEY POPPIES.—Display:
1st, L. H. Atkins, $3; 2d, Mrs J. Lewis, $2.
VASE OF FLOWERS.—Best arranged:
1st, Mrs. E. M. Gill, $4; 2d, W. C. Winter, $3.

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Gratuities:—

G. Hollis, Display of Perennial Phloxes, $1.
Mrs. E. M. Gill, Danebrog Poppies, $1.
Miss A. H. Warburton, Crimson Rambler Roses and Poppies, $1.
Col. C. Pfaff, Display of Hybrid Roses, $4.
W. J. Clemson, Collection of Roses and Gloxinias, $2.
W. J. Clemson, Display of Sweet Peas, named, $3.
E. L. Lewis, Sweet Peas, $1.
Mrs. J. B. Lawrence, Display of Dianthuses, $1.
B. P. Ware, Nymphæas, $1.
Blue Hill Nurseries, Display Herbaceous Plants and Cut Flowers, $3.
Mrs. J. B. Lawrence, Herbaceous Plants, Cut Blooms, $2.

JULY 19. (*Changed from July 26.*)

TUBEROUS BEGONIAS.—Collection, arranged with their own foliage, in flat dishes:
1st, E. S. Converse, $4.

HARDY AQUATIC FLOWERS.—Collection named:
1st, O. Ames, $8; 2d, Mrs. J. L. Gardner, $6.

General Display.—Arranged for effect, in space of twelve or more square feet:
1st, Mrs. E. M. Gill, $6; 2d, Miss H. B. Winter, $4.

Gratuities:

B. P. Ware, Display of Nymphæas, $1.
W. J. Clemson, Display of Perennial Phloxes, $2.
W. J. Clemson, Display of *Phlox Drummondi*, $1.
G. Hollis, Display of named Hardy Phloxes, $1.
E. L. Lewis, Display of Hollyhocks, $4.
W. J. Clemson, Sweet Peas, named, $2.
Mrs. J. Lewis, Display of Annual Poppies, $1.
B. F. Flanders, Display of Dahlias, $1.
J. E. Rothwell, Display of Cut Orchids, $6.

JULY 26. (*Changed from August 2.*)

SWEET PEAS.—Display of named varieties, filling thirty vases, arranged with their own foliage:
1st, W. J. Clemson, $6; 2d, E. L. Lewis, $4.

HARDY HERBACEOUS FLOWERS.—Thirty bottles:
1st, W. J. Clemson, $6; 2d, C. Blomberg, $5.

VASE OF FLOWERS.—For table decoration:
1st, Mrs. E. M. Gill, $4; 2d, Miss H. B. Winter, $3.

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Gratuities:—

Blue Hill Nurseries, Display of Herbaceous Plants, $2.
C. Blomberg, " " " " $1.
Blue Hill Nurseries, Display of Perennial Phloxes, $1.
W. J. Clemson, " " " " $1.
Mrs. G. Duncan, " " " " $1.
G. Hollis, " " " " $1.
E. L. Lewis, Display of Hollyhocks, $2.
Mrs. E. M. Gill, Display of Roses, $1.
A. Nixon, Display of Cut Flowers, $1.

AUGUST 2. (*Changed from August 9.*)

PERENNIAL PHLOXES.—Twelve named varieties, one truss of each:
1st, T. C. Thurlow, $5; 2d, G. Hollis, $4.

ANTIRRHINUMS.—Display of thirty vases, three spikes in each, not less than ten varieties:
1st, Mrs. J. B. Lawrence, $3; 2d, W. J. Clemson, $2.

General Display.—Arranged for effect in space of thirty or more square feet:
1st, Mrs. E. M. Gill, $6; 2d, Miss H. B. Winter, $4.

General Display.—Arranged for effect, in space of twelve or more square feet:
1st, Mrs. J. Lewis, $2; 2d, Mrs. E. M. Gill, $1.

Gratuities:—

T. C. Thurlow, Display of Perennial Phloxes, $4.
W. J. Clemson, Display of Phloxes, $1.
B. F. Flanders, Display of Dahlias, $3.
F. A. Blake, Display of Gloxinias, $3.
Shady Hill Nursery Co., Display of Herbaceous Plants and Cut Flowers, $7.

AUGUST 9. (*Changed from August 16.*)

ANNUALS.—General Display, named, not less than fifty varieties, filling not less than one hundred and fifty bottles:
1st, E. S. Converse, $12; 2d, Mrs. J. L. Gardner, $10.

Gratuities:—

G. Hollis, Display of Perennial Phloxes. $1.
B. F. Flanders, Display of Dahlias, $2.
Mrs. J. B. Lawrence, Display of Dahlias, $1.

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A. F. Schenkelberger, Display of named Gladioli, $1.
E. L. Lewis, Display of Sweet Peas and Roses, $1.
Mrs. E. M. Gill, Display of Cut Flowers, $4.
Mrs. J. B. Lawrence, Display of Cut Flowers, $1.

AUGUST 16. (*Changed from August 23.*)

MONTBRETIAS.—Display in Vases:
2d, Mrs. J. B. Lawrence, $2.

PERENNIAL PHLOXES.—General display, in not less than thirty vases:
1st, T. C. Thurlow, $8; 2d, G. Hollis, $6; 3d, Mrs. G. Duncan, $4.

Gratuities:—

W. Whitman, Display of Perennial Phloxes, $4.
J. B. Lawrence, Display of Dahlias, $2.
W. P. Lothrop, " " " $2.
R. P. Struthers, " " " $1.

AUGUST 23. (*Changed from August 30.*)

Theodore Lyman Fund.

ASTERS.—Large flowered, of all classes, fifty vases, not less than twelve varieties, three flowers in each vase:
1st, F. A. Blake, $6; 2d, W. Whitman, $5.

VICTORIA AND PÆONY FLOWERED.—Thirty blooms, not less than twelve varieties:
1st, J. H. White, $4; 2d, W. Whitman, $3; 3d, F. A. Blake, $2.

SEMPLE.—Thirty blooms, not less than three varieties:
2d, E. S. Converse, $3.

POMPON.—Twenty-four cut plants, not less than six varieties:
1st, W. Whitman, $4.

HARDY HERBACEOUS FLOWERS.—Thirty bottles:
1st, Shady Hill Nursery, $6; 2d, C. Blomberg, $5.

Gratuities:—

Mrs. J. L. Gardner, Display of Asters, $3.
E. S. Converse, " " " $1.
C. Blomberg, Display of Herbaceous Plants, $1.
F. J. Rea, Display of Gladioli, $1.
W. Whitman, Display of Gladioli and Asters, $3.
W. P. Lothrop, Display of Asters and Dahlias, named, $3.
G. Hollis, two large vases of Cut Flowers, $1.

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ANNUAL EXHIBITION OF PLANTS AND FLOWERS.

SEPTEMBER 11, 12, 13 AND 14.

Theodore Lyman Fund.

AQUATICS.—General Display of Nymphæas, Nelumbiums, Sedges, Papyrus, and other Aquatic Plants, arranged for effect, to include not less than twenty-five blooms of Nymphæas:
1st, O. Ames, $25.

GLADIOLI.—Display of named and unnamed varieties, filling one hundred vases, arranged for effect, with any foliage:
1st, W. P. Lothrop, $8.

Society's Prizes.

DAHLIAS.—Show, eighteen blooms, named varieties:
1st, W. C. Winter, $4; 2d, H. F. Burt, $3.

Fancy, eighteen blooms, named varieties:
1st, H. F. Burt, $4.

Cactus, twelve blooms, named varieties:
1st, H. F. Burt, $4; 2d, W. H. Symonds, $3; 3d, W. P. Lothrop, $2.

Decorative, twelve blooms, named varieties:
1st, W. C. Winter. $4; 2d, W. P. Lothrop, $3; 3d, H. F. Burt, $2.

Show, six blooms, named varieties:
1st, W. C. Winter, $2; 3d, W. C. Winter, $1.

Fancy, six blooms, named varieties:
1st, H. F. Burt, $2; 2d, H. F. Burt, $1.

Best single bloom, of any class, introduction of 1900 or later:
1st, W. P. Lothrop, $1.

Pompon, twelve vases of three blooms each, named varieties:
1st, J. K. Alexander, $3; 2d, W. C. Winter, $2; 3d, W. P. Lothrop, $1.

Single, twelve vases of three blooms each, named varieties:
1st, W. C. Winter, $2; 2d, H. F. Burt, $1.

General Display, one hundred or more bottles, in the Society's racks, arranged for effect:
1st, W. C. Winter, $12; 2d, J. K. Alexander, $10; 3d, Mrs. J. B. Lawrence, $8; 4th, W. G. Winsor, $6; 5th, W. H. Symonds, $4.

TROPÆOLUMS.—Display, with their foliage, filling twenty-five vases, not over eighteen blooms of one variety:
1st, Mrs. E. M. Gill, $3; 2d, E. S. Converse, $2.

MARIGOLDS.—Display of French and African, filling twenty-five vases:
1st, W. Whitman, $3; 2d, Mrs. J. L. Gardner, $2.

DOUBLE ZINNIAS.—Fifty flowers, not less than twelve varieties:
1st, Col. C. Pfaff, $3; 2d, Mrs. J. L. Gardner, $2.

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CHINA ASTERS.—Display of Large Flowered, of all classes, not less than fifty vases, three flowers in each:

1st, Col. C. Pfaff, $8; 2d, Miss F. H. Breed, $6; 3d, W. Whitman, $4.

PERENNIAL ASTERS.— Collection of Native or Introduced species and varieties:

1st, Mrs. E. M. Gill, $5; 2d, Misses E. A. and M. S. Doran, $4.

DIANTHUSES.—Collection of Annual and Biennial varieties, filling thirty bottles:

1st, Mrs. J. B. Lawrence, $3.

ORNAMENTAL FRUITED HARDY TREES AND SHRUBS.—Collection of Cut Branches, named:

1st, Col. C. Pfaff, $5.

HARDY HERBACEOUS FLOWERS.—Thirty bottles:

1st, Blue Hill Nurseries, $6; 2d, Shady Hill Nursery, $5.

VASE OF FLOWERS.—For table decoration:

1st, Mrs. E. M. Gill, $4; 2d, Miss H. B. Winter, $3.

Gratuities:—

H. F. Burt, Display of Dahlias, $6.
N. W. T. Knott, " " " $2.
R. P. Struthers, " " " $2.
E. S. Converse, Display of China Asters, $1.
C. L. Hovey, Display of Marigolds, $1.
O. B. Hadwen, Display of Gladioli, $3.
F. J. Rea, Display of Gladioli and Perennial Asters, $1.
A. B. Howard, Collection of Petunias and Verbenas, $2.
G. McWilliams, Collection of Dipladenias, $5.
Mrs. H. L. Higginson, Vase of *Lilium Wallichianum Superbum*, $1.
Henry A. Dreer, Exhibit of Nymphæas, $10.
Henry A. Dreer, " " " $10.
Col. C. Pfaff, Collection of Hardy Cut Flowers and Shrubs, $2.
Mrs. E. M. Gill, Display of Cut Flowers, $4.

OCTOBER EXHIBITION OF FRUITS AND VEGETABLES.

OCTOBER 3 AND 4.

Gratuities:—

H. F. Burt, Display of Cacus, Fancy, and Show Dahlias, $10.
W. P. Lothrop, Display of Dahlias, $5.
H. F. Burt, Display of Show Dahlias, $4.
C. L. Hovey, Display of Dahlias, $4.
Mrs. E. M. Gill, " " " $4.

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R. & J. Farquhar & Co., Display of Liliums, $6.
R. & J. Farquhar & Co., Display of Gladioli, $6.
Blue Hill Nurseries, Display of Herbaceous Flowers, $8.

CHRYSANTHEMUM SHOW.

NOVEMBER 6, 7, 8 AND 9.

Special Prizes.

Josiah Bradlee Fund.

CHRYSANTHEMUMS.—Twenty-five blooms, of twenty-five distinct varieties, named, a piece of plate or value in money:
1st, Mrs. B. P. Cheney, $18; 2d, Miss E. J. Clark, $12.
Six Vases of six named varieties, ten blooms each:
1st, Mrs. A. W. Spencer, $30; 2d, Miss E. J. Clark, $25.

Henry A. Gane Memorial Fund.

For the best twelve specimen blooms of any of the Seedling Chrysanthemums originated by the late Henry A. Gane:
1st, C. D. Sias, $20; 2d, Mrs. A. W. Spencer, $10.

Society's Prizes.

Twelve blooms, Japanese, named, in vases:
1st, Mrs. B. P. Cheney, $10; 2d, Miss E. J. Clark, $6.
Twelve blooms, Japanese Incurved, named, in vases:
1st, Mrs. B. P. Cheney, $10; 2d, Miss E. J. Clark, $6; 3d, P. B. Robb, $4.
Twelve blooms, Anemone, named, in vases:
1st, E. S. Converse, $8.
Six blooms, Incurved, named, in vases:
1st, E. S. Converse, $5.
Six blooms, Japanese, named, in vases:
1st, Miss E. J. Clark, $6; 2d, Mrs. B. P. Cheney, $4; 3d, P. B. Robb, $2.
Six blooms, Japanese Incurved, named, in vases:
1st, Mrs. B. P. Cheney, $6; 2d, J. J. Albright, $4; 3d, P. B. Robb, $2.
Six blooms, Reflexed, named, in vases:
1st, Mrs. B. P. Cheney, $6; 2d, J. J. Albright, $4; 3d, P. B. Robb, $2.
Six blooms, Anemone, named, in vases:
1st, E. S. Converse, $5; 3d, E. S. Converse, $2.
Six best varieties, named, introductions of the current year:
1st, Miss E. J. Clark, $6.

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Vase of ten blooms, on long stems, Pink, named:
1st, Mrs. A. W. Spencer, $10; 2d, C. D. Sias, $8; 3d, Miss E. J. Clark, $6.

Vase of ten blooms, on long stems, Red, named:
1st, Mrs. A. W. Spencer, $10; 2d, Miss E. J. Clark, $8; 3d, Mrs. B. P. Cheney, $6.

Vase of ten blooms, on long stems, White, named:
1st, Mrs. A. W. Spencer, $10; 2d, Mrs. A. W. Spencer, $8; 3d, C. D. Sias, $6.

Vase of ten blooms, on long stems, Yellow, named:
1st, Mrs. A. W. Spencer, $10; 2d, C. D. Sias, $8; 3d, Miss E. J. Clark,

Vase of ten blooms, on long stems, any other color named:
1st, C. D. Sias, $10; 2d, Mrs. A. W. Spencer, $8; 3d, Mrs. B. P. Cheney, $6.

VIOLETS.—Collection of varieties, fifty blooms each:
1st, N. F. Comley, $5; 2d, Col. C. Pfaff, $4.

Gratuities:

E. N. Pierce & Sons, Four of the Society's large vases, of Chrysanthemums, $30.
Mrs. E. M. Gill, Display of Chrysanthemums, $12.
Mrs. A. W. Spencer, Display of Chrysanthemums, $10.
E. S. Converse, Display of Single and Pompon Chrysanthemums, $8.
Mrs. B. P. Cheney, Display of Chrysanthemums, $5.
G. A. Clark, Vase of Chrysanthemums, $3.
Col. Charles Pfaff, Display of Orchids, $6.
Patten & Co., Twelve vases assorted Carnations, $12.
S. J. Reuter, two vases of Carnations, $5.
G. J. Small, " " " " $4.
Little South Floral Co., Display of Carnations, $3.
H. A. Stevens & Co., Vase of Carnation, Gov. Wolcott, $1.
S. J. Goddard, Vase of Carnation, The Queen, $1.
C. Jurgens, Large vase of American Beauty Roses, $7.

SOCIETY'S SILVER GILT MEDALS.

February 8. Mrs. J. L. Gardner, first prize for Display of Orchids, named species and varieties, filling not less than twenty bottles.

Spring Exhibition March 19–23. W. P. Winsor, first prize for Display of Orchids, named species and varieties, filling not less than twenty bottles.

Chrysanthemum Show, November 6–9. Mrs. F. L. Ames, first prize for Display of Orchids, named species and varieties, filling not less than twenty bottles.

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KELWAY SILVER GILT MEDAL.

(*Offered by Kelway & Son, Langport, England.*)

Pæony Exhibition, June 14. A. H. Fewkes, first prize for Collection of Herbaceous Pæonies, named varieties, single or double.

SOCIETY'S SILVER MEDAL.

February 8. Col. C. Pfaff, second prize for Display of Orchids, named species and varieties, filling not less than twenty bottles.

Spring Exhibition, March 19–23. J. E. Rothwell, second prize for Display of Orchids, named species and varieties, filling not less than twenty bottles.

Rose and Strawberry Exhibition, June 19 and 20. F. J. Rea, for *Campanula persicifolia Moerheimii*.

Chrysanthemum Show, November 6–9. O. Ames, second prize for Display of Orchids, named species and varieties, single or double.

Chrysanthemum Show. P. Fisher, for large vase of Carnation, Enchantress. (New.)

Chrysanthemum Show. A. Roper, for large vase of Carnation, Fair Maid. (New.)

Chrysanthemum Show. E. G. Asmus, for Twentieth Century Rose, F. Deegen.

KELWAY BRONZE MEDAL.

(*Offered by Kelway & Son, Langport, England.*)

Pæony Exhibition, June 14. G. Hollis, second prize for Collection of Herbaceous Pæonies, named varieties, single or double.

FIRST CLASS CERTIFICATES OF MERIT.

Rhododendron Exhibition, June 7. F. J. Rea, for Collection of German Irises, named.

Rose and Strawberry Exhibition, June 19 and 20. G. Hollis, for Pæony Maud L. Richardson.

Rose and Strawberry Exhibition, June 19 and 20. G. Hollis, for Pæony Goliath.

July 5. A. H. Brigham, for white variety of *Cypripedium spectabile*.

Annual Exhibition of Plants and Flowers, September 11–14. H. A. Dreer, for Nymphæa Mrs. C. W. Ward.

October Exhibition of Fruits and Vegetables, October 3 and 4. R. & J. Farquhar, for new type of single Dahlia, designated "Collerette Dahlia" named President Viger.

Chrysanthemum Show, November 6–9. W. Hunnewell, Sport from Chrysanthemum Oriental Glory, unnamed.

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HONORABLE MENTION.

Spring Exhibition, March 19–23. M. H. Walsh, for Seedling Rambler Rose Miss Simplicity.

Rose and Strawberry Exhibition, June 19 and 20. G. Hollis, for Pæony Seedling No. 28.

July 5. F. J. Rea, for Rosa Wichuraiana hybrida Dorothy Perkins.

July 5. H. A. Wheeler, for Shasta Daisy.

July 19. G. Hollis, for Seedling Hardy Phlox Gaiety.

August 23. A. Cowee, for Display of Hybrid Gladioli.

Annual Exhibition of Plants and Flowers, September 11–14. H. A. Dreer, for Nymphæa Pennsylvanica.

Annual Exhibition of Plants and Flowers, September 11–14. A. Cowee, for Display of Groff's Hybrid Gladioli.

Annual Exhibition of Plants and Flowers, September 11–14. M. H. Walsh, for Seedling Perennial Phlox.

Annual Exhibition of Plants and Flowers, September 11–14. Floral Company, South Natick, for Carnation The Queen.

Chrysanthemum Show, November 6–9. H. Dale Estate, Brampton, Ontario, for new rose Canadian Queen.

J. Woodward Manning,
Michael H. Norton,
Kenneth Finlayson,
Frederick S. Davis,
James Comley.
} *Committee on Flowers.*

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REPORT

OF THE

COMMITTEE ON FRUITS

FOR THE YEAR 1902.

By E. W. WOOD, CHAIRMAN.

The exhibitions of the past year have shown that the different varieties of fruit grown in the State have been more generally represented than usual. The apple crop, as usual on the even calendar year, has been abundant and of good quality. Pears, owing to the cold, wet weather when they were in bloom, did not set a full crop, but they have been fairly represented in the exhibitions. Peaches have been shown in much larger quantities than for several years; the experience of some large growers, especially in Connecticut, seems to show that with improved care and cultivation this most desirable fruit may be successfully grown in New England. With plums we notice an increase of the Japanese varieties though seemingly at the expense of some of the best of the old varieties. The Reine Claude de Bavay, Green Gage, and McLaughlin have not been shown for several years.

The small fruits were shown during the season in the usual quantity. Of new fruits the attention of the committee was called to specimens of peaches, plums, strawberries, and grapes, some of which seemed promising, but have not yet been sufficiently tested to warrant recommendation for general cultivation.

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Commercial fruit growers have had a fairly profitable season. Cold storage and constantly increasing foreign demand for apples have prevented a glut in the home market, and prices have been well sustained. The export of apples has been confined almost entirely to the English market. The French and German as well as other foreign markets offer an opportunity for widely extending this trade.

Among growers of pears for market the tendency has been a reduction of the varieties; many varieties formerly grown at a profit have almost disappeared from our markets.

The most unfavorable feature in the outlook for the future of profitable commercial fruit growing is in the increase of insects injurious to almost every tree and plant.

The desire to secure new fruits and flowers and the increased facilities by which they may be obtained have resulted in the addition of many valuable trees, plants, fruits, and flowers; but with them we have received some of the most injurious insects with which the fruit grower has to contend, largely increasing the labor and expense necessary to preserve the trees and produce merchantable fruit.

The committee has awarded in premiums and gratuities $1,600, leaving an unexpended balance of $100.

PRIZES AND GRATUITIES AWARDED FOR FRUITS.

1902.

SPRING EXHIBITION.

MARCH 19, 20, 21, 22 AND 23.

WINTER APPLES.—Baldwin:
1st, G. V. Fletcher, $3; 2d, A. E. Hartshorn, $2; 3d, M. W. Chadbourne, $1.

Northern Spy:
1st, G. V. Fletcher, $3; 2d, G. C. Rice, $2.

Roxbury Russet:
1st, G. V. Fletcher, $3; 2d, A. E. Hartshorn, $2; 3d, H. R. Kinney, $1.

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Tompkins King:
1st, G. C. Rice, $3.
Any other variety;
1st, G. V. Fletcher, Rhode Island Greening, $3; 2d, W. H. Hunt, Hunt Russet, $2; 3d, G. V. Fletcher, Mackintosh, $1.
WINTER PEARS.—Any variety:
1st, G. V. Fletcher, Anjou, $3; 2d, W. Fenno, Josephine of Malines, $2.
STRAWBERRIES.—One pint:
1st, E. S. Converse, $3.

JUNE 7. (*Changed from June 6, 7 and 8.*)

Gratuity:—

W. C. Winter, Nectarines, $1.

ROSE AND STRAWBERRY EXHIBITION.

JUNE 19 AND 20. (*Changed from June 24 and 25.*)

Theodore Lyman Fund.

STRAWBERRIES.—Four quarts of any variety:
1st, V. Frost, the Lyman Plate, value $20; 2d, G. V. Fletcher, the Lyman Plate, value $16; 5th, G. F. Wheeler, the Lyman Plate, value, $8.

Special Prizes offered by the Society.

Two quarts of any variety best adapted for garden cultivation for home use:
1st, G. V. Fletcher, Marshall, $6; 3d, I. E. Coburn, Jessie, $4: 4th, G. F. Wheeler, Minute Man, $3.

Regular Prizes.

For the largest and best collection, not less than fifteen baskets of two quarts each, and not less than five varieties:
1st, I. E. Coburn, $20; 2d, G. F. Wheeler, $15.
Ten baskets, not less than three varieties, two quarts each:
1st, I. E. Coburn, $15; 2d, G. V. Fletcher, $12; 3d, G. F. Wheeler, $10; 4th, W. Wheeler, $8.
Five baskets of one variety, two quarts each:
1st, G. V. Fletcher, $8; 2d, I. E. Coburn, $6; 3d, G. F. Wheeler, $5; 4th, W. Wheeler, $4.

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Two quarts of Belmont:
1st, I. E. Coburn, $4; 2d, G. V. Fletcher, $3.
Brandywine:
1st, E. S. Converse, $4; 3d, G. F. Wheeler, $2.
Bubach:
1st, G. V. Fletcher, $4; 2d, O. R. Robbins, $3.
Clyde:
1st, G. V. Fletcher, $4; 3d, G. F. Wheeler, $2.
Crescent:
3d, G. F. Wheeler, $2.
Haverland:
1st, I. E. Coburn, $4; 2d, G. F. Wheeler, $3; 3d, W. Wheeler, $2.
Hersey:
3d, G. F. Wheeler, $2.
Jessie:
1st, I. E. Coburn, $4.
Marshall:
1st, G. V. Fletcher, $4; 2d, V. Frost, $3; 3d, J. A. Beebe, $2.
Miner's Prolific:
1st, G. F. Wheeler, $4; 2d, W. Wheeler, $3.
Nick Ohmer:
1st, J. A. Beebe, $4; 2d, I. E. Coburn, $3; 3d, E. S. Converse, $2.
Parker Earle:
1st, I. E. Coburn, $4.
Sample:
1st, I. E. Coburn, $4; 2d, E. S. Converse, $3; 3d, G. V. Fletcher, $2.
Any other variety:
1st, S. H. Warren, Great Scott, $4; 2d, I. E. Coburn, Ridgeway, $3; 3d, G. F. Wheeler, Minute Man, $2.
One quart of any variety not previously exhibited:
1st, S. H. Warren, Great Scott, $5; 2d, S. H. Warren, No. 19, $4.

CHERRIES.—Two quarts of any variety:
1st, Miss E. W. Rumrill, Black Tartarian, $4; 2d, J. H. Fletcher, Royal Ann, $3; 3d, G. V. Fletcher, Black Tartarian, $2.

FOREIGN GRAPES.—Two bunches of any variety:
1st, Miss E. J. Clark, Black Hamburg, $6; 2d, W. C. Winter, Muscat of Alexandria, $4.

FORCED PEACHES.—Six specimens of any variety:
1st, Miss E. J. Clark, Hale's Early, $3.

Gratuity:—

P. B. Bradley, Nectarines, $3.

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PRIZES AND GRATUITIES FOR FLOWERS.

JULY 5. (*Changed from July 12.*)

STRAWBERRIES.—Two quarts of any variety:
1st, W. H. Monroe, Seedling, $4; 2d. G. V. Fletcher, Marsl

CHERRIES.—Two quarts of Black Eagle:
1st, G. V. Fletcher, $3; 2d, E. S. Converse, $2.

Black Tartarian:
1st, G. V. Fletcher, $3.

Coe's Transparent:
1st, C. S. Smith, $3; 2d, J. L. Bird, $2.

Downer:
1st, M. W. Chadbourne, $3; 2d, C. S. Smith, $2; 3d,
verse, $1.

Any other variety:
1st, M. W. Chadbourne, White Heart, $3; 2d, C. P Travis,
3d, C. S. Smith, Hyde Seedling, $1.

Gratuity:—

J. S. Chase, Triumph Gooseberries, $1.

JULY 12. (*Changed from July 19.*)

RASPBERRIES.—Two quarts of any variety:
1st, Mrs. E. J. Cutter, $3; 2d, E. S. Converse, $2.

CURRANTS.—Two quarts of any Red variety:
1st, W. J. Clemson, Versaillaise, $4; 2d, W. J. Clemson,
3d, D. Mahoney, Fay's, $2; 4th, C. Pfaff, Fay's, $1.

Two quarts of any White variety:
1st, C. Pfaff, White Grape, $3; 2d, J. S. Chase, Transpare
W. J. Clemson, White Grape, $1.

GOOSEBERRIES.—Two quarts of any variety of American origin
1st, J. S. Chase, Triumph, $4; 2d, W. J. Clemson, Columb
J. S. Chase, Columbus, $2; 4th D. Mahoney, Columbus,

Gratuities:—

W. J. Clemson, Collection of Cherries, $2.
M. W. Chadbourne, Cherries, $1.
W. C. Winter, Collection, $1.
Miss E. J. Clark, Collection of Grapes, Peaches, and Ne
Silver Medal.

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JULY 19. (*Changed from July 26.*)

RASPBERRIES.—Two quarts of any variety:
1st, Mrs. E. J. Cutter, $3; 2d, E. L. Lewis, $2; 3d, E. S. Converse, $1.
CURRANTS.—Two quarts of any Red variety:
1st, W. J. Clemson, Versaillaise, $3; 2d, D. L. Fiske, $2.
Two quarts of any White variety:
1st, H. R. Kinney, White Grape, $2.
GOOSEBERRIES.—Two quarts of any foreign variety:
1st, W. J. Clemson, Whitesmith, $4; 2d, D. Mahoney, Whitesmith, $3; 3d, G. L. Brown, Silversmith, $2.

Gratuities:—

W. C. Winter, Plums, $1.
W. J. Clemson, Collection, $1.

JULY 26. (*Changed from August 2.*)

BLACKBERRIES.—Two quarts of any variety:
1st, M. W. Chadbourne, Dorchester, $3.
APPLES.—Tetofsky:
1st, W. C. Winter, $3; 3d, D. L. Fiske, $1.
Yellow Transparent:
1st. E. S. Converse, $3; 2d, G. L. Brown, $2; 3d, D. L. Fiske, $1.
PEARS.—Summer Doyenne:
1st, W. Fenno, $3; 2d, E. S. Converse, $2; 3d, D. L. Fiske, $1.

Gratuities:—

W. J. Clemson, Peaches, $1.
D. L. Fiske, " $1.
A. Low, " $1.

AUGUST 2. (*Changed from August 9.*)

APPLES.—Red Astrachan:
1st, M. W. Chadbourne, $3; 2d, W. H. Hunt, $2; 3d, F. W. Damon, $1.
Sweet Bough:
1st, C. B. Travis, $3; 2d, G. V. Fletcher, $2; 3d, W. Heustis & Son, $1.
Any other variety:
1st, V. Frost, Williams, $3; 2d, E. S. Converse, Yellow Transparent, $2; 3d, J. C. Stone, Williams, $1.
PEARS.—Giffard:
1st, A. T. Brown, $3; 2d, W. Fenno, $2; 3d, F. W. Damon, $1.
Any other variety:
1st, A. T. Brown, Clapp's Favorite, $3; 2d, W. Fenno, Doyenne, $2; 3d, J. L. Bird, Wilder, $1.

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BLACKBERRIES.—Two quarts of any variety:
1st, M. W. Chadbourne, $3; 2d, W. J. Clemson, $2; 3d, A. Low, $1.
PEACHES.—Open culture, any variety:
1st, Mrs. E. J. Cutter, Alexander, $3; 2d, D. L. Fiske, Waterloo, $2; 3d, A. Low, Hale's Early, $1.

Gratuity:—

Mrs. J. C. Whitin, Collection of Grapes, Nectarines, and Peaches, $3.

AUGUST 9. (*Changed from August 16.*)

APPLES.—Oldenburg:
1st, Mrs. A. F. Estabrook, $3; 2d, Mrs. H. A. Clark, $2; 3d, W. Fenno, $1.
Any other variety:
1st, V. Frost, Williams, $3; 2d, M. W. Chadbourne, Williams, $2; 3d, W. H. Hunt, Astrachan, $1.
PEARS.—Clapp's Favorite:
1st, Mrs. H. A. Clark, $3; 2d, E. Torrey, $2; 3d, A. T. Brown, $1.
Any other variety:
1st, A. T. Brown, Giffard, $3; 2d, F. W. Damon, Giffard, $2; 3d, W. Fenno, Giffard, $1.
PEACHES.—Twelve specimens of outdoor culture, of any variety:
1st, A. Low, Alexander, $3; 2d, A Low, Hale's Early, $2; 3d, A. M. Clement, Greenboro, $1.
Six specimens of cold house or pot culture:
1st, Mrs. J. C. Whitin, Crimson Garland, $3; 2d, Mrs. J. C. Whitin, Royal George, $2.
BLACKBERRIES.—Two quarts of any variety:
1st, N. T. Kidder, Dorchester, $3; 2d, M. W. Chadbourne, Dorchester, $2; 3d, W. J. Clemson, Agawam, $1.
PLUMS.—Japanese, any variety:
1st, E. L. Lewis, Chabot, $3; 2d, E. L. Lewis, Abundance, $2; 3d, W. Warburton, Abundance, $1.
NECTARINES.—Orchard house culture, twelve specimens:
1st, Mrs. J. C. Whitin, $4.
FOREIGN GRAPES.—Two bunches of any variety:
1st, E. S. Converse, Black Hamburg, $5; 2d, Mrs. J. C. Whitin, Alexander, $4.

AUGUST 16. (*Changed from August 23.*)

APPLES.—Chenango:
1st, C. F. Curtis, $3; 2d, G. L. Brown, $2.
Summer Pippin:
1st, W. Fenno, $3.

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Williams:
1st, V. Frost, $1; 2d, J. C. Stone, $2; 3d, A. F. Coolidge, $1.
Any other variety:
1st, W. Fenno, Sops of Wine, $3; 2d, G. V. Fletcher, Sweet Bough, $2; 3d, J. C. Stone, Gravenstein, $1.

PEARS.—Rostiezer:
1st, E. S Converse, $3; 2d, M. W. Chadbourne $2; 3d, A. T. Brown, $1.
Tyson:
1st, J. L. Bird, $3; 2d, W. Fenno, $2.
Any other variety:
1st, A. T. Brown, Clapp's Favorite, $3; 2d, E. Torrey, Clapp's Favorite, $2; 3d, W. Fenno, Clapp's Favorite, $1.

PEACHES.—Any variety:
1st, C. F. Curtis, $3; 2d, A. M. Clement, $2; 3d, G. V. Fletcher, $1.

PLUMS, JAPANESE.—Abundance:
1st, E. L. Lewis, $3; 2d, D. L. Fiske, $2; 3d, J. Dunn, $1.
Burbank:
1st, D. L Fiske, $3; 2d, A. M. Clement, $2; 3d, A. Low, $1.
Any other variety:
1st, G. V. Fletcher, Bradshaw, $3; 2d, E. L. Lewis, Chabot, $2; 3d, D. L. Fiske, Red Nagate, $1.

AUGUST 23. (*Changed from August 30.*)

APPLES.—Foundling:
1st, C. M. Handley, $3.
Gravenstein:
1st, W. Fenno, $3; 2d, Mrs. H. A. Clark, $2; 3d, A. F. Coolidge, $1.
Maiden's Blush:
1st, W. C. Winter, $3; 2d, C. F. Curtis, $2; 3d, W. Fenno, $1.
Porter:
1st, G. V. Fletcher, $3; 2d, W. Heustis & Son, $2; 3d, J. C. Stone, $1.
Any other variety:
1st, J. C. Stone, Williams, $3; 2d, Mrs. H. A. Clark, Oldenburg, $2; 3d, A. E. Henderson, Bietigheimer, $1.

PEARS.—Andrews:
1st, E. S. Converse, $3; 2d, J. C. Stone, $2.
Bartlett:
1st, W. Milman, $3; 2d, V. Frost, $2; 3d, A. T. Brown, $1.
Any other variety:
1st, Mrs. H. A. Clark, Clapp's Favorite, $3; 2d, F. W. Damon, Clapp's Favorite, $2; 3d, J. B. Shurtleff, Jr., Clapp's Favorite, $1.

PEACHES.—Collection:
1st, D. L. Fiske, $3; 2d, A. Low, $2.

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Single dish of any variety:
1st, F. H. Evans, Carman, $3; 2d, A. Low, Carman, $2; 3d, D. L. Fiske, St. John, $1.

PLUMS.—Bradshaw:
1st, G. V. Fletcher, $3; 2d, C. F. Curtis, $2; 3d, A. Low, $1.

Any other variety:
1st, W. P. Hutchinson, Lincoln, $3; 2d, E. L. Lewis, Washington, $2; 3d, C. C. Field, Burbank, $1.

AUGUST 30.

Gratuity:—

W. O. Sweet, Collection of Peaches, Plums, and Apples, $2.

ANNUAL EXHIBITION OF PLANTS AND FLOWERS.

SEPTEMBER 11, 12, 13 AND 14.

Special Prizes.

Theodore Lyman Fund.

For the heaviest and best ripened bunch of any Foreign Black Grape, not less than six pounds:
1st, Miss E. J. Clark, $15.

Society's Prizes.

APPLES.—Fall Orange or Holden:
1st, C. M. Handley, $3; 2d, F. J. Kinney, $2.

Foundling:
1st, C. M. Handley, $3; 2d, O. B. Hadwen, $2; 3d, G. C. Rice, $1.

Garden Royal:
1st, C. M. Handley, $3; 2d, C. B. Travis, $2.

Gravenstein:
1st, J. H. Locke, $3; 2d, W. Heustis & Son, $2; 3d, W. Fenno, $1.

Hubbardston:
1st, C. M. Handley, $3; 2d, L. F. Cooke, $2; 3d, A. E. Hartshorn, $1.

Mackintosh:
1st, W. O. Sweet, $3; 2d, L. Doran, $2; 3d, F. J. Kinney, $1.

Maiden's Blush:
1st, H. R. Kinney, $3; 2d, O. B. Hadwen, $2; 3d, E. E. Cole, $1.

Mother:
1st, H. R. Kinney, $3; 2d, W. Fenno, $2; 3d, W. C. Winter, $1.

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Porter:
1st, J. C. Stone, $3; 2d, G. V. Fletcher, $2; 3d, M. W. Chadbourne, $1.
Pumpkin Sweet:
1st, J. Parker, $3; 2d, O. B. Hadwen, $2.
Red Bietigheimer:
1st, J. H. White, $3; 2d, G. C. Rice, $2; 3d, M. Sullivan, $1.
Sutton:
1st, F. J. Kinney, $3; 2d, O. B. Hadwen, $2; 3d, D. L. Fiske, $1.
Washington Strawberry:
1st, G. C. Rice, $3; 2d, A. E. Hartshorn, $2; 3d, W. Fenno, $1.
Wealthy:
1st, G. C. Rice, $3; 2d, W. D. Hinds, $2; 3d, C. M. Handley, $1.
Any other variety:
1st, A. F. Estabrook, Twenty Ounce, $3; 2d, G. C. Rice, Somerset, $2; 3d, W. Fenno, Alexander, $1.

CRAB APPLES.—Transcendent, twenty-four specimens:
1st, C. E. Wiggin, $2; 2d, Miss E. W. Rumrill, $1.
Any other variety:
1st, M. W. Chadbourne, $2; 2d, A. E. Hartshorn, $1.

PEARS.—Bartlett:
1st, V. Frost, $3; 2d, Mrs. H. A. Clark, $2; 3d, W. H. Derby, $1.
Belle Lucrative:
1st, A. T. Brown, $3; 2d, E. S. Converse, $2; 3d, W. Fenno, $1.
Bosc:
1st, J. B. Shurtleff, Jr., $3; 2d, A. T. Brown, $2; 3d, W. H. Derby, $1.
Boussock:
1st, E. Torrey, $3; 2d, C. F. Curtis, $2; 3d, W. Fenno, $1.
Hardy:
1st, W. Milman, $3; 2d, W. Fenno, $2.
Louise Bonne of Jersey:
1st, A. T. Brown, $3; 2d, W. Fenno, $2; 3d, F. W. Damon, $1.
Paradise of Autumn:
1st, W. Milman, $3; 2d, W. Fenno, $2; 3d, G. F. Pierce, $1.
Seckel:
1st, W. Milman, $3; 2d, A. T. Brown, $2; 3d, W. Patterson, $1.
Sheldon:
1st, G. E. Freeman, $3: 2d, F. W. Damon, $2; 3d, A. T. Brown, $1.
Souvenir du Congrès:
1st, W. Fenno, $3; 2d, A. T. Brown, $2.
Any other variety:
1st, E. Torrey, Flemish Beauty, $3; 2d, W. Fenno, Pratt, $2; 3d, W. Heustis & Son, Bonne d' Ezée, $1.

PEACHES.—Coolidge's Favorite:
1st, D. L. Fiske, $3.

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Crawford's Early:
1st, D. L. Fiske, $3; 2d, G. V. Fletcher, $2; 3d, J. A. Beebe, $1.
Crosby:
1st, D. L. Fiske, $3; 3d, W. D. Hinds, $1.
Foster:
1st, D. L. Fiske, $3; 2d, J. C. Stone, $2; 3d, S. H. Warren, $1.
Oldmixon Freestone:
1st, D. L. Fiske, $3.
Stump the World:
1st, E. L. Lewis, $3: 2d, D. L. Fiske, $2.
Any other variety:
1st, W. D. Hinds, Champion, $3; 2d, C. F. Curtis, Champion, $2; 3d, F. H. Evans, Elberta, $1.
Any variety of orchard house culture:
1st, J. H. White, $4.

NECTARINES.—Outdoor culture, any variety:
1st, W. Fenno, $2.

PLUMS.—Imperial Gage:
1st, E. S. Converse, $3; 2d, F. J. Kinney, $2.
Lombard:
1st, E. L. Lewis, $3; 2d, V. Frost, $2; 3d, G. V. Fletcher, $1.
Any other variety:
1st, H. R. Kinney, Bradshaw, $3; 2d, V. Frost, Yellow Egg, $2; 3d, G. V. Fletcher, Yellow Egg, $1.

JAPANESE PLUMS.—Any variety:
1st, W. Warburton, $3; 2d, D. L. Fiske, $2; 3d, W. C. Winter, $1.

FOREIGN GRAPES.—Two bunches of Black Alicante:
1st, Miss E. J. Clark, $5; 2d, Mrs. J. C. Whitin, $4.
Lady Downs:
1st, Miss E. J. Clark, $5.
Muscat of Alexandria:
1st, Miss E. J. Clark, $5; 2d, Mrs. J. C. Whitin, $4.
Any other variety:
1st, Miss E. J. Clark, Gros Guillaume, $5; 2d, Miss E. J. Clark, Gros Maroc, $4; 3d, Miss E. J. Clark, Mrs. Pearson, $3.

NATIVE GRAPES.—Six bunches of Campbell's Early:
1st, F. J. Kinney, $3; 2d, L. Darling, $2.
Massasoit:
1st, J. S. Chase, $3; 2d, F. W. Damon, $2.
Moore's Early;
1st, G. W. Jameson, $3; 2d, E. L. Lewis, $2; 3d, F W. Damon, $1.
Any other variety:
1st, J. S. Chase, Delaware, $3; 2d, H. R. Kinney, Worden, $2; 3d, F. W. Damon, Lindley, $1.
Six bunches from girdled vines, of any variety:
1st, H. R. Kinney, Worden, $3; 2d, H. R. Kinney, Green Mountain, $2

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Gratuities:—

H. Eaton, Collection of Apples from dwarf trees set out in 1889, $2.

M. W. Chadbourne, Collection, $2.

OCTOBER EXHIBITION OF FRUITS AND VEGETABLES.

OCTOBER 3 AND 4.

Special Prizes.

Samuel Appleton Fund.

APPLES.—Baldwin:

1st, J. C. Stone, $4; 2d, M. Sullivan, $3; 3d, Goodell Farm, $2; 4th, M. W. Chadbourne, $1.

Hubbardston:

1st, A. Frost, $4; 2d, C. M. Handley, $3; 3d, F. J. Kinney, $2; 4th, L. F. Cooke, $1.

PEARS.—Bosc:

1st, C. F. Curtis, $4; 2d, G. V. Fletcher, $3; 3d, A. T. Brown, $2; 4th, J. L. Bird, $1.

Sheldon:

1st, E. Torrey, $4; 2d, J. L. Bird, $3; 3d, G. V. Fletcher, $2; 4th, A. T. Brown, $1.

Benjamin V. French Fund.

APPLES.—Gravenstein:

1st, C. F. Boyden, $4; 2d, C. E. Gates, $3; 3d, F. J. Kinney, $2; 4th, E. M. Bruce, $1.

Rhode Island Greening:

1st, A. F. Coolidge, $4; 2d, W. P. Hutchinson, $3; 3d, G. V. Fletcher, $2; 4th, A. Frost, $1.

Marshall P. Wilder Fund.

PEARS.—Anjou:

1st, W. Milman, $4; 2d, F. W. Damon, $3; 3d, A. T. Brown, $2; 4th, A. F. Coolidge, $1.

Bartlett:

1st, G. V. Fletcher, $4; 2d, V. Frost, $3; 3d, A. T. Brown, $2.

GRAPES.—Concord, twelve bunches:

1st, H. R. Kinney, $4; 2d, E. A. Adams, $3; 3d, J. S. Chase, $2; 4th, G. V. Fletcher, $1.

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Worden:
1st, H. R. Kinney, $4; 2d, J. S. Chase, $3.

Theodore Lyman Fund.

APPLES.—Dutch Codlin:
1st, Mrs. S. A. Nye, $2; 2d, W. Fenno, $1.
Fall Orange or Holden:
1st, C. M. Handley, $3.
Fletcher Russet:
1st, E. R. Teele, $3; 2d, C. M. Handley, $2; 3d, G. V. Fletcher, $1.
Foundling:
1st, C. M. Handley, $4; 2d, E. M. Bruce, $3; 3d, O. B. Hadwen, $2.
Gloria Mundi:
1st, C. D. Eames, $3; 2d, E. M. Bruce, $2.
Golden Russet:
1st, H. R. Kinney, $2.
Lady's Sweet:
2d, W. Fenno, $1.
Maiden's Blush:
1st, H. R. Kinney, $3; 2d, O. B. Hadwen, $2; 3d, W. Fenno, $1.
Mother:
1st, H. R. Kinney, $3; 2d, W. Fenno, $2; 3d, G. C. Rice, $1.
Porter:
1st, A. Frost, $3; 2d, L. E. Cooke, $2; 3d, M. Sullivan, $1.
Pound Sweet:
1st, G. C. Rice, $3; 2d, G. V. Fletcher, $2; 3d, E. M. Bruce, $1.
Sutton:
1st, F. J. Kinney, $3; 2d, D. L. Fiske, $2; 3d, O. B. Hadwen, $1.
Palmer:
1st, E. M. Bruce, $3; 2d, O. B. Hadwen, $2; 3d, G. C. Rice, $1.
Wealthy:
1st, M. Sullivan, $3; 2d, C. M. Handley, $2; 3d, G. C. Rice, $1.
Any other variety:
1st, J. B. Shurtleff, Jr., King, $3; 2d, J. Parker, Belleflower, $2; 3d, M. Martin, King, $1.

Regular Prizes.

PEARS.—Angouleme:
1st, W. H. Derby, $4; 2d, J. L. Bird, $3; 3d, S. Coolidge, $2; 4th, A. T. Brown, $1.
Clairgeau:
1st, W. H. Derby, $3; 2d, C. F. Curtis, $2; 3d, F. W. Damon, $1.
Comice:
1st, A. T. Brown, $3; 2d, J. L. Bird, $2; 3d, W. Fenno, $1.

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Dana's Hovey:
1st, A. T. Brown, $4; 2d, W. Milman, $3; 3d, W. Heustis & Son, $2; 4th, F. W. Damon, $1.
Diel:
1st, A. T. Brown, $3; 2d, F. W. Damon, $2; 3d, A. K. Gould, $1.
Fulton:
1st, E. S. Converse, $3; 2d, C. F. Curtis, $2; 3d, W. Fenno, $1.
Hardy:
1st, Mrs. E. M. Gill, $3; 2d, W. Milman, $2; 3d, A. K. Gould, $1.
Howell:
1st, S. Coolidge, $3; 2d, W. Fenno, $2.
Josephine of Malines:
1st, W. Fenno, $3; 2d, J. L. Bird, $2.
Lawrence:
1st, A. T. Brown, $3; 2d, M. W. Chadbourne, $2; 3d, W. Fenno, $1.
Louise Bonne of Jersey:
1st, W. H. Derby, $3; 2d, M. Sullivan, $2; 3d, W. Fenno, $1.
Marie Louise:
1st, E. Torrey, $3; 2d, A. T. Brown, $2; 3d, W. Fenno, $1.
Merriam:
1st, W. Heustis & Son, $3; 2d, F. W. Damon, $2; 3d, W. Fenno, $1.
Onondaga:
1st, J. L. Bird, $3; 2d, C. B. Travis, $2; 3d, W. Fenno, $1.
Seckel:
1st, A. T. Brown, $4; 2d, W. Milman, $3; 3d, M. W. Chadbourne, $2; 4th, D. Perkins, $1.
Sheldon:
1st, E. Torrey, $4; 2d, D. Perkins, $3; 3d, F. W. Damon, $2; 4th, G. F. Wheeler, $1.
Superfin:
1st, W. Fenno, $3; 2d, F. W. Damon, $2.
Urbaniste:
1st, A. T. Brown, $3; 2d, E. S. Converse, $2; 3d, J. L. Bird, $1.
Any other variety:
1st, W. Fenno, Pratt, $3; 2d, J. L. Bird, Kingsessing, $2; 3d, W. Fenno, St. Michael Archangel, $1.

QUINCES.—Champion;
1st, G. V. Fletcher, $3; 2d, J. S. Chase, $2.
Orange:
1st, G. V. Fletcher, $3; 2d, W. Fenno, $2; 3d, J. C. Stone, $1.
Pear:
1st, G. L. Brown, $3.
Rea:
1st, G. V. Fletcher, $3.
Any other variety:
1st, J. S. Chase, $3.

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PEACHES.—Crawford's Late:
1st, D. L. Fiske, $3; 2d, C. P. Trowbridge, $2; 3d, S. H. Warren, $1.
Any other variety:
1st, C. F. Fenno, $3; 2d, E. P. Ripley, $2; 3d, G. V. Fletcher, $1.
PLUMS.—Coe's Golden Drop:
1st, C. Scully, $2.
Yellow Egg:
1st, G. V. Fletcher, $2.
Any other variety:
1st, H. R. Kinney, Shipper's Pride, $2; 2d, D. L. Fiske, Satsuma, $1.
NATIVE GRAPES.—Six bunches of Brighton:
1st, C. W. Libby, $3; 2d, E. A. Adams, $2; 3d, J. S. Chase, $1.
Delaware:
1st, J. S. Chase, $4; 2d, W. T. Hutchinson, $3; 3d, W. Fenno, $2; 4th, H. R. Kinney, $1.
Eumelan:
1st, J. S. Chase, $3.
Herbert:
1st, G. W. Jameson, $3; 2d, J. S. Chase, $2; 3d, C. W. Libby, $1.
Iona:
2d, J. S. Chase, $2.
Lindley:
1st, C. W. Libby, $3; 2d, J. S. Chase, $2.
Niagara:
1st, J. S Chase, $3; 2d, E. S. Converse, $2; 3d, E. L. Lewis, $1.
Pocklington:
1st, H. R. Kinney, $4; 2d, J. S. Chase, $3; 3d, F. H. Jackson, $2; 4th, C. W. Libby, $1.
Prentiss:
1st, J. S. Chase, $3.
Wilder:
1st, E. A. Adams, $3.
Any other variety:
1st, J. S. Chase, $3; 2d, G. W. Jameson, $2; 3d, C. W. Libby, $1.
Any variety from girdled vines:
1st, H. R. Kinney, Worden, $3; 2d, H. R. Kinney, Salem, $2; 3d, H. R. Kinney, Concord, $1.
CRANBERRIES.—Half-peck:
1st, C. P. Trowbridge, $3; 2d, L. J. Fosdick, $2; 3d, L. J. Fosdick, $1

Gratuities:—

W. Fenno, Collection of Pears and Apples, $10.
Miss E. J. Clark, Collection of Pears and Apples, $2.
M. W. Chadbourne, Collection, $2.
Mrs. F. L. Ames, Muscat of Alexandria Grapes, a Silver Medal.

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CHRYSANTHEMUM SHOW.

NOVEMBER 6, 7, 8 AND 9.

Benjamin V. French Fund.

APPLES.—Baldwin:
1st, M. W. Chadbourne, $3; 2d, Mrs. M. B. Whiting, $2; 3d, G. V. Fletcher, $1.
Rhode Island Greening:
1st, Miss A. Whiting, $3; 2d, A. Frost, $2; 3d, G. V. Fletcher, $1.

Society's Prizes.

APPLES.—Danvers Sweet:
1st, J. K. Manning, $3; 2d, W. Fenno, $2; 3d, B. P. Ware, $1.
Fameuse:
1st, G. V. Fletcher, $3; 2d, M. W. Chadbourne, $2; 3d, G. C. Rice, $1.
Fletcher Russet:
1st, E. R. Teele, $3; 2d, G. V. Fletcher, $2; 3d, W. H. Teele, $1.
Hubbardston:
1st, A. Frost, $3; 2d, F. J. Kinney, $2; 3d, A. T. Leavitt, $1.
Hunt Russet:
1st, W. G. Kendall, $3; 2d, C. F. Boyden, $2.
Jacob's Sweet:
1st, M. Martin, $3; 2d, C. F. Curtis, $2.
Lady's Sweet:
1st, O. B. Wyman, $3; 2d, D. L. Fiske, $2; 3d, F. J. Kinney, $1.
Mackintosh:
1st, F. J. Kinney, $3; 2d, E. M. Bruce, $2; 3d, G. C. Rice, $1.
Northern Spy:
1st, G. V. Fletcher, $3; 2d, O. B. Wyman, $2; 3d, A. E. Hartshorn, $1.
Roxbury Russet:
1st, H. R. Kinney, $3; 2d, W. H. Boyden, $2; 3d, A. E. Hartshorn, $1.
Tolman's Sweet:
1st, G. V. Fletcher, $3; 2d, Mrs. A. E. Underwood, $2; 3d, A. Frost, $1.
Tompkins King:
1st, C. F. Boyden, $3; 2d, J. B. Shurtleff, Jr., $2; 3d, G. C. Rice, $1.
Any other variety:
1st, Mrs. A. E. Underwood, Belleflower, $3; 2d, E. E. Doran, Belleflower, $2; 3d, J. Parker, Belleflower, $1.
PEARS.—Angoulême:
1st, E. Torrey, $4; 2d, F. W. Damon, $3; 3d, J. L. Bird, $2; 4th, W. Fenno, 1$.

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Anjou:
1st, W. Milman, $4; 2d, F. W. Damon, $3; 3d, E. S. Converse, $2; 4th, W. Fenno, $1.

Bosc:
1st, A. T. Brown, $4; 2d, G. V. Fletcher, $3; 3d, J. L. Bird, $2; 4th, J. B. Shurtleff, Jr., $1.

Clairgeau:
1st, C. F. Curtis, $3; 2d, W. Fenno, $2; 3d, B. P. Ware, $1

Comice:
1st, A. T. Brown, $4; 2d, J. L. Bird, $3; 3d, W. Fenno, $2; 4th, A. K. Gould, $1.

Dana's Hovey:
1st, A. T. Brown, $4; 2d, W. G. Kendall, $3; 3d, E. W. Howe, $2; 4th, W. Milman, $1.

Diel:
1st, A. K. Gould, $3; 2d, A. T. Brown, $2.

Glout Morceau:
1st, Mrs. A. A. Johnson, $3; 2d, W. Fenno, $2; 3d, E. A. Hall, $1.

Josephine of Malines:
1st, J. L. Bird, $3; 2d, W. Fenno, $2; 3d, J. B. Shurtleff, Jr., $1.

Langelier:
1st, A. T. Brown, $3; 2d, A. K. Gould, $2; 3d, W. Fenno, $1.

Lawrence:
1st, W. Fenno, $3; 2d, M. Sullivan, $2; 3d, J. L. Bird, $1.

Vicar:
1st, J. L. Bird, $3; 2d, A. T Brown, $2; 3d, E. S. Converse, $1.

Winter Nelis:
1st, A. T. Brown, $3; 2d, E. S. Converse, $2; 3d, W. Fenno, $1.

Any other variety:
1st, E. Torrey, Beurré d'Arenberg, $3; 2d, W. Milman, Mt. Vernon, $2; 3d, A. T. Brown, Seckel, $1.

QUINCES.—Any variety:
1st, G. V. Fletcher, Rea, $3; 2d, G. V. Fletcher, Orange, $2; 3d, W. Fenno, Orange, $1.

Gratuity:—

M. W. Chadbourne, Collection, $2.

E. W. WOOD,
CHARLES F. CURTIS,
WARREN FENNO,
J. WILLARD HILL,
GEORGE F. PIERCE,
JOHN L. BIRD,
FREDERICK W. DAMON.
} *Committee on Fruits.*

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REPORT

OF THE

COMMITTEE ON VEGETABLES

FOR THE YEAR 1902.

By Warren Howard Heustis, Chairman.

The past season has been unusually favorable for plant growth, and we have to report displays of vegetables far above the average.

At the winter exhibitions there were very full entries in all classes. The tomatoes grown by C. A. Learned were especially noticeable, both for size and quality, and were considered the best shown here for years. The vines on which they were grown were particularly thrifty and the fruit set very low down.

The interest in exhibiting produce is increasing, as the number of exhibitors this year was sixty, against forty competitors last year.

There has been hardly a good specimen of green-flesh melon shown this year, which would lead one to think that this class of fruit must be grown under glass like a cucumber and even then the life of the vine is very short.

There has been a fair showing of salmon-flesh melons and from this we would infer that this melon is not as subject to fungus or insect pests as the green-flesh.

At the September and November shows a silver and a bronze medal were offered for eight roots of celery shown without side branches, which resulted in the exhibition of a remarkably fine lot.

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There was enough celery at the November show to extend completely around the small hall. At the Annual Exhibition of Fruits and Vegetables in October, Mr. Simmons, of Rockland, Mass., showed an excellent looking potato which he has called "Simmons' Model" and your committee thought it deserving of a First Class Certificate of Merit.

We hope it will continue to be in its future development as satisfactory as it appears to be at present. We are sorry to know that our appropriation is to be cut down twenty-five per cent as we found it was originally small enough.

We have expended for prizes and gratuities $1156.00, leaving an unexpended balance of $44.00, out of which is to be paid the cost of two silver medals, two bronze medals, and one First Class Certificate of Merit.

PRIZES AND GRATUITIES AWARDED FOR VEGETABLES.

1902.

JANUARY 4.

RADISHES.—Four bunches of any variety:
1st, A. E. Hartshorn, $3.

CUCUMBERS.—Pair of any variety:
1st, W. C. Winter, $3; 2d, Mrs. J. L. Gardner, $2; 3d, E. F. Scolley, $1.

CAULIFLOWERS.—Four specimens:
1st, C. M. Handley, $3.

CELERY.—Four roots of any variety:
1st, A. E. Hartshorn, Boston Market, $3; 2d, W. Heustis & Son, Boston Market, $2; 3d, W. Heustis & Son, Giant Pascal, $1.

LETTUCE.—Four heads of Tennisball:
2d, A. E. Hartshorn, $2; 3d, W. J. Clemson, $1.

PARSLEY.—Two quarts:
1st, W. J. Clemson, Chappell's, $2; 2d, W. J. Clemson, Champion, $1.

MUSHROOMS.—Twenty-four specimens:
1st, W. C. Winter, $3; 2d, H. R. Kinney, $2.

TOMATOES.—Twelve specimens:
1st, C. A. Learned, $3; 2d, W. C. Winter, $2; 3d, W. C. Winter, $1.

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Gratuities:—

E. L. Lewis, Collection, $3.
A. E. Hartshorn, " $2.
W. Heustis & Son, " $1.
A. Low, " $1.

FEBRUARY 8.

RADISHES.—Four bunches of any variety:
1st, A. E. Hartshorn, $3.
SALSIFY.—Twelve specimens:
1st, V. Frost, $3.
CUCUMBERS.—Pair of any variety:
1st, W. C. Winter, $3.
CELERY.—Four roots of any variety:
1st, W. Heustis & Son, Pascal, $3; 2d, A. E. Hartshorn, Paris Golden, $2; 3d, W. Heustis & Son, Boston Market, $1.
DANDELIONS.—Peck:
1st, A. E. Hartshorn, $3.
LETTUCE.—Four heads of Tennisball:
1st, J. C. Stone, $3; 2d, A. E. Hartshorn, $2.
RHUBARB.—Twelve stalks:
1st, F. Wheeler, $3; 2d, C. F. Smith, $2.
TOMATOES.—Twelve specimens;
1st, C. A. Learned, $3; 2d, W. C. Winter, $2; 3d, W. C. Winter, $1.

Gratuity:—

A. E. Hartshorn, Collection, $2.

MARCH 8.

Gratuity:—

G. D. Moore, Lettuce, $1.

SPRING EXHIBITION.

MARCH 19, 20, 21, 22 AND 23.

William J. Walker Fund.

RADISHES.—Four bunches of Turnip Rooted:
1st, W. W. Rawson, $2; 2d, A. E. Hartshorn, $1.

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CUCUMBERS.—Pair of White Spine:
1st, W. W. Rawson, $3.
DANDELIONS.—Peck:
1st, J. C. Stone, $3; 2d, A. E. Hartshorn, $2; 3d, A. E. Hartshorn, $1.
LETTUCE.—Four heads of Tennisball:
1st, Wyman Bros., $3; 2d, W. W. Rawson, $2; 3d, J. C. Stone, $1.
WATER CRESS.—Two quarts:
1st, A. E. Hartshorn, $2; 2d, B. P. Ware, $1.
PARSLEY.—Two quarts:
1st, W. J. Clemson, $2; 2d, J. C. Stone, $1.
MUSHROOMS.—Twenty-four specimens:
1st, Wyman Bros., $3; 2d, H. R. Kinney, $2; 3d, H. R. Kinney, $1.
RHUBARB.—Twelve stalks:
1st, F. Wheeler, $3; 2d, Wyman Bros., $2; 3d, W. H. Derby, $1.
TOMATOES.—Twelve specimens:
1st, W. C. Winter, $3; 2d, W. C. Winter, $2.

Gratuities:—

E. S. Converse, Beans, $1.
M. W. Chadbourne, Artichokes, $1.
A. E. Hartshorn, Collection, $3.
W. Heustis & Son, " $2.
G. D. Moore, " $1.
W. W. Rawson, " $1.
H. E. Rich, " $1.

APRIL 5.

BEETS.—Twelve specimens of Turnip Rooted
1st, W. Warburton, $3; 2d, A. Nixon, $2; 3d, A. Low, $1.
PARSNIPS.—Twelve specimens:
1st, A. Nixon, $3; 2d, W. Warburton, $2; 3d, J. Nuttall, $1.
RADISHES.—Four bunches:
1st, A. Nixon, $2; 2d, A. E. Hartshorn, $1.
LETTUCE.—Four heads:
1st, A. E. Hartshorn, $3; 2d, G. D. Moore, $2; 3d, H. R. Kinney, $1.
CUCUMBERS.—Pair of White Spine:
1st, W. C. Winter, $3.

Gratuities:—

A. E. Hartshorn, Collection, $2.
A. Low, " $1.

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MAY 10.

William J. Walker Fund.

ASPARAGUS.—Four bunches of twelve stalks each:
1st, W. H. Hunt, $3; 2d, W. J. Clemson, $2; 3d, A. E. Hartshorn, $1.
CUCUMBERS.—Pair of White Spine:
1st, E. M. Bruce, $3; 2d, W. C. Winter $2.
Any other variety:
1st, E. M. Bruce, $3; 2d, E. M. Bruce, $2; 3d, E. M. Bruce, $1.
SPINACH.—Peck.
1st, A. Low, $3; 2d, G. D. Moore, $2; 3d, A E. Hartshorn, $1.
DANDELIONS.—Peck.
1st, J. C. Stone, $3; 2d, W. Heustis & Son, $2; 3d, A. E. Hartshorn, $1.
LETTUCE.—Four heads:
1st, W. Warburton, $3; 2d, J. C. Stone, $2.
RHUBARB —Twelve stalks:
1st, W. Heustis & Son, $3; 2d, W. J. Clemson, $2; 3d, A. Low, $1.
TOMATOES.—Twelve specimens:
1st, W. J. Clemson, $3; 2d, W. C. Winter, $2; 3d, A. Low, $1.

Gratuities:—

A. E. Hartshorn, Collection, $2.
W. J. Clemson, " $1.
W. Heustis & Son, " $1.
A. Low, " $1.
G. D. Moore, " $1.
J. C. Stone, " $1.
W. C. Winter, " $1.

RHODODENDRON EXHIBITION.

JUNE 7. (*Changed from June 6, 7 and 8.*)

Theodore Lyman Fund.

BEETS.—Twelve specimens:
1st, G. D. Moore, $3; 2d, A. E. Hartshorn, $2.
CARROTS.—Twelve specimens:
1st, W. J. Clemson, Short Horn, $3; 2d, W. J. Clemson, Early Forcing, $2; 3d, A. E. Hartshorn, Early Forcing, $1.
RADISHES.—Four bunches of Turnip Rooted:
1st, W J. Clemson, $2; 2d, A. E. Hartshorn, $1.

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ASPARAGUS.—Four bunches:
1st, W. H. Hunt, $3.
CUCUMBERS.—Pair:
1st, G. D. Moore, $3; 2d, V. Frost, $2; 3d, J. C. Stone, $1.
LETTUCE.—Four heads of any variety:
1st, W. Heustis & Son, Big Boston, $3; 2d, W. Heustis & Son, Tennisball, $2; 3d, V. Frost, Big Boston, $1.
RHUBARB.—Twelve stalks:
1st, W. J. Clemson, $3; 2d, W. Heustis & Son, $2; 3d, G. D. Moore, $1.
MUSHROOMS.—Twenty-four specimens:
1st, W. C. Winter, $3; 2d, A. J. Edwards, $2.

Gratuities:—

W. J. Clemson, Collection, $3.
A. E. Hartshorn, " $2.
G. D. Moore, " $2.
W. Warburton, " $2.
A. Low, " $1.

JUNE 14.

Gratuities:—

W. H. Hunt, Asparagus, $1.
A. E. Hartshorn, Collection, $2.
W. Heustis & Son, " $1.

ROSE AND STRAWBERRY EXHIBITION.

JUNE 19 AND 20. (*Changed from June 24 and 25.*)

BEETS.—Twelve specimens of Summer Turnip Rooted:
1st, G. D. Moore, $3; 2d, A. E. Hartshorn, $2; 3d, E. L. Lewis, $1.
ONIONS.—Twelve specimens:
1st, A. E. Hartshorn, $3; 2d, T. Valentine, $2; 3d, W. J. Clemson, $1.
CUCUMBERS.—Pair of White Spine:
1st, V. Frost, $3; 2d, G. D. Moore, $2; 3d, A. E. Hartshorn, $1.
Any other variety:
1st, N. T. Kidder, $3; 2d, A. E. Hartshorn, $2.
CABBAGES.—Three of any variety, trimmed:
1st, G. D. Moore, Early Spring, $3; 2d, G. D. Moore, Wakefield, $2.

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LETTUCE.—Four heads of Tennisball:
1st, W. Heustis & Son, $3; 2d, T. Valentine, $2; 3d, A. E. Hartshorn, $1.
Any other variety:
1st, E. L. Lewis, Defiance, $3; 2d, E. L. Lewis, Deacon, $2; 3d, E. L. Lewis, Immensity, $1.
PEAS.—Half-peck of any variety:
1st, W. J. Clemson, Gradus, $3; 2d, A. E. Hartshorn, Gradus, $2; 3d, P. B. Bradley, Gradus, $1.
Gratuities:—
W. H. Hunt, Asparagus, $1.
N. T. Kidder, Cauliflowers, $2.
E. S. Converse, Tomatoes, $1.
G. D. Moore, Collection, $3.
A. E. Hartshorn, " $2
W. Heustis & Son, " $2.
E. L. Lewis, " $2.

JULY 5. (*Changed from July 12.*)

POTATOES.—Twelve specimens:
1st, E. L. Lewis, Hebron, $3; 2d, E. L. Lewis, Early Rose, $2; 3d, W. J. Clemson, Early Rose, $1.
ONIONS.—Twelve specimens:
1st, A. E. Hartshorn, $2; 2d, E. L. Lewis, $1.
SQUASHES.—Four specimens of Long Warted:
1st, J. C. Stone, $3.
Scalloped:
1st, J. C. Stone, $3.
CABBAGES.—Three of any variety, trimmed:
1st, G. D. Moore, Succession, $3; 2d, W. Heustis & Son, Early Spring, $2; 3d, G. D. Moore, Early, Spring, $1.
BEANS.—Half-peck of Wax:
1st, J. C. Stone, $3; 2d, G. D. Moore, $2; 3d, E. L. Lewis, $1.
Any other variety:
1st, G. D. Moore, $3.
PEAS.—Half-peck of American Wonder:
1st, A. E. Hartshorn, $3; 2d, E. L. Lewis, $2.
Half-peck of Advancer:
1st, A. E. Hartshorn, $3; 2d, Mrs. E. M. Gill, $2.
Half-peck of any other variety.
1st, A. E. Hartshorn, $3; 2d, A. Low, $2; 3d, F. Tetlow, $1.

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Gratuities:—

W. Heustis & Son, Collection, $3.
E. L. Lewis, " $3.
W. J. Clemson, " $2.
G. D. Moore, " $2.
A. Low, " $1.

JULY 12. (*Changed from July 19.*)

Levi Whitcomb Fund.

POTATOES.—Twelve specimens:
1st, E. L. Lewis, Early Rose, $3; 2d, W. J. Clemson, Early Rose, $2; 3d, F. J. Kinney, Hebron, $1.
CABBAGES.—Three Drumhead, trimmed:
1st, G. D. Moore, $3; 2d, W. Heustis & Son, $2; 3d, G. D. Moore, $1.
LETTUCE.—Four heads:
1st, A. E. Hartshorn, $3; 2d, E. L. Lewis, $2; 3d, A. E. Hartshorn, $1.
BEANS.—Half-peck of Wax:
1st, E. L. Lewis, $3; 2d, G. D. Moore, $2; 3d, A. E. Hartshorn, $1.
Half-peck of any green variety:
1st, J. C. Stone, $3; 2d, G. D. Moore, $2; 3d, A. E. Hartshorn, $1.
SQUASHES.—Four specimens of Long Warted:
1st, J. C. Stone, $3; 2d, A. E. Hartshorn, $2; 3d, H. Leavitt, $1.
Four specimens of White Scalloped:
1st, J. C. Stone, $3; 2d, W. Heustis & Son, $2.

Gratuities:—

E. L. Lewis, Collection, $3.
W. J. Clemson, " $2.
W. Warburton, " $2.
Mrs. E. M. Gill, " $1.
W. Heustis & Son, " $1.
H. Leavitt, " $1.
G. D. Moore, " $1.

JULY 19. (*Changed from July 26.*)

POTATOES.—Twelve specimens:
1st, E. L. Lewis, Hebron, $3; 2d, E. L. Lewis, Early Rose, $2; 3d, W. J. Clemson, Early Rose, $1.
LETTUCE.—Four heads of Tennisball:
1st, W. Heustis & Son, $2.
Any other variety:
1st, H. R. Kinney, Wonderful, $3; 2d, E. L. Lewis, Deacon, $2.

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PEAS.—Half-peck of Stratagem:
1st, A. Nixon, $3.
Any other variety:
1st, H. R. Kinney, Champion, $3; 2d, J. Thorpe, Carter's Daisy, $2; 3d, A. E. Hartshorn, Telephone, $1.
SWEET CORN.—Twelve ears:
1st, G. D. Moore, Farquhar's Early, $3; 2d, J. C. Stone, Cory, $2.
TOMATOES.—Open culture, twelve specimens:
1st, A. E. Hartshorn, Acme, $3; 2d, G. D. Moore, Earliana, $2; 3d, J. C. Stone, Atlantic, $1.

Gratuities:—

W. J. Clemson, Collection, $2.
W. Heustis & Son, " $2.
E. L. Lewis, " $2.
A. Nixon, " $2.
J. Thorpe, " $2.
W. Warburton, " $2.
A. E. Hartshorn, " $1.

JULY 26. (*Changed from August 2.*)

POTATOES.—Twelve specimens:
1st. E. L. Lewis, Early Rose, $3; 2d, W. J. Clemson, Early Rose, $2; 3d, J. W. Burns, Early Northern, $1.
SQUASHES.—Three specimens of Marrow:
1st, J. C. Stone, $3; 2d, T. Valentine, $2.
SWEET CORN.—Twelve ears of Crosby:
1st, G. D. Moore, $3; 2d, J. C. Stone, $2.
Any other variety:
1st, G. D. Moore, Potter's Excelsior, $3; 2d, G. D. Moore, Cory, $2; 3d, J. C. Stone, Cory, $1.
TOMATOES.—Twelve specimens:
1st, W. C. Winter, May's Favorite, $3; 2d, W. Warburton, Dwarf Champion, $2; 3d, A. E. Hartshorn, Acme, $1.
NATIVE MUSHROOMS.—Named collection of not less than five edible varieties:
1st, Mrs. Grinnell, $4; 2d, Mrs. S. C. Pierce, $3.

Gratuities:—

W. J. Clemson, Collection, $1.
E. L. Lewis, " $1.
W Warburton, " $1.

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AUGUST 2. (*Changed from August 9.*)

BEETS.—Twelve specimens:
1st, G. D. Moore, $3; 2d, W. J. Clemson, $2; 3d, E. L. Lewis, $1.
TURNIPS.—Twelve specimens:
1st, E. L. Lewis, $2.
CABBAGES.—Three specimens:
1st, W. Heustis & Son, Succession, $3; 2d, W. Heustis & Son, No. 2, $2; 3d, A. E. Hartshorn, $1.
BEANS.—Two quarts of Goddard, shelled:
1st, J. Thorpe, $3.
Two quarts of Horticultural, shelled:
1st, A. E. Hartshorn, $3; 2d, J. Thorpe, $2.
TOMATOES.—Twelve specimens:
1st, V. Frost, Belmont, $3; 2d, J. Thorpe, Matchless, $2; 3d, J. Thorpe, Dwarf Aristocrat, $1.
SQUASHES.—Three specimens of Marrow:
1st, J. C. Stone, $3.

Gratuity:—

W. J. Clemson, Collection, $1.

AUGUST 9. (*Changed from August 16.*)

CARROTS.—Twelve specimens:
1st, W. J. Clemson, $3; 2d, E. L. Lewis, $2; 3d, A. Nixon, $1.
SALMON FLESH MELONS.—Four specimens:
1st, G. D. Moore, $3; 2d, A. E. Hartshorn, $2.
SWEET CORN.—Twelve ears:
1st, W. J. Clemson, $3; 2d, J. C. Stone, $2; 3d, E. L. Lewis, $1.
TOMATOES.—Twelve specimens:
1st, V. Frost, $3; 2d, A. F. Coolidge, $2; 3d, J. C. Stone, $1.
EGG PLANT.—Four specimens of Round Purple:
1st, A. F. Coolidge, $3.

Gratuity:—

E. L. Lewis, Collection, $1.

AUGUST 16. (*Changed from August 23.*)

POTATOES.—Twelve specimens:
1st, E. L. Lewis, Clark's No. 1, $3; 2d, E. L. Lewis, Early Rose, $2; 3d, J. W. Burns, $1.

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ONIONS.—Twelve specimens:
1st, A. F. Coolidge, $3; 2d, E. L. Lewis, $2; 3d, T. Valentine, $1.
SALMON FLESH MELONS.—Any variety, four specimens:
2d, G. D. Moore, $2.
CELERY.—Four roots of any variety:
1st, A. F. Coolidge, $3; 2d, F. Tetlow, $2; 3d, J. Thorpe, $1.
BEANS.—Two quarts of Goddard, shelled:
1st, A. E. Hartshorn, $3; 2d, J. Thorpe, $2; 3d, J. W. Burns, $1.
SWEET CORN.—Twelve ears of any variety other than Potter's Excelsior:
1st, J. C. Stone, $3; 2d, E. L. Lewis, $2; 3d, J. Thorpe, $1.
TOMATOES.—Twelve specimens:
1st, A. F. Coolidge, Stone, $3; 2d, A. F. Coolidge, Belmont, $2; 3d, W. Heustis & Son, Belmont, $1.
PEPPERS.—Twelve specimens of Squash:
1st, A. Low, $3; 2d, A. Low, $2; 3d, W. Warburton, $1.
Any other variety:
1st, E. L. Lewis, $3; 2d, W. Warburton, $2; 3d, A. E. Hartshorn, $1.

Gratuities:—

W. J. Clemson, Collection, $2.
W. Heustis & Son, " $1.
A. Low, " $1.
T. Valentine, " $1.

AUGUST 23. (*Changed from August 30.*)

BEETS.—Twelve specimens:
1st, W. Warburton, $3; 2d, E. L. Lewis, $2; 3d, E. L. Lewis, $1.
GREEN FLESH MELONS.—Four specimens:
1st, A. E. Hartshorn, $3.
SALMON FLESH MELONS.—Four specimens:
1st, V. Frost, $3; 2d, A. E. Hartshorn, $2.
WATERMELONS.—Pair:
3d, J. Thorpe, $1.
CAULIFLOWERS.—Four specimens:
1st, DeSouza Bros., $3; 2d, C. M. Handley, $2; 3d, W. H. Teele, $1.
CELERY.—Four roots:
1st, F. Tetlow, $3; 2d, A. F. Coolidge, $2; 3d, A. E. Hartshorn, $1.
MARTYNIAS.—Twelve specimens:
1st, E. L. Lewis, $2; 2d, E. S. Converse, $1.
NATIVE MUSHROOMS.—Named collection of not less than five edible varieties:
1st, Mrs. Grinnell, $3; 2d, Boston Mycological Club, $2.

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Gratuities:—

W. Heustis & Son, Collection, $1.
A. Low, " $1.
J. B. Shurtleff, Jr., " $1.
W. Warburton, " $1.

ANNUAL EXHIBITION OF PLANTS AND FLOWERS.

SEPTEMBER 11, 12, 13 AND 14.

Special Prizes.

CELERY.—Eight roots without side branches:
1st, A. Nixon, A Silver Medal; 2d, V. Frost, A Bronze Medal.

Regular Prizes.

BEETS.—Twelve specimens:
1st, G. D. Moore, $3; 2d, W. Warburton, $2; 3d, W. Warburton, $1.
PARSNIPS.—Twelve specimens:
1st, W. Heustis & Son, $3; 2d, G. D. Moore, $2; 3d, E. L. Lewis, $1.
SALSIFY.—Twelve specimens:
1st, G. D. Moore, $3; 2d, V. Frost, $2; 3d, W. Heustis & Son, $1.
TURNIPS.—Twelve specimens of Flat:
1st, G. F. Wheeler, $3; 2d, W. Wheeler, $2; 3d, E. L. Lewis, $1.
SALMON FLESH MELONS.—Four specimens:
1st, J. A. Beebe, $3; 2d, J. C. Stone, $2.
WATERMELONS.—Pair:
1st, J. Thorpe, $3; 2d, E. L. Lewis, $2; 3d, J. Thorpe, $1.
CABBAGES.—Three specimens, any variety:
1st, A. Low, $3; 2d, E. L. Lewis, $2; 3d, A. E. Hartshorn, $1.
CAULIFLOWERS.—Four specimens:
1st, C. M. Handley, $3; 2d, W. H. Teele, $2; 3d, E. R. Teele, $1.
LETTUCE.—Four heads of any variety:
1st, E. L. Lewis, Deacon, $3; 2d, E. L. Lewis, Defiance, $2; 3d, E. L. Lewis, Immensity, $1.
CELERY.—Four roots of any variety:
1st, A. Nixon, $3; 2d, A. F. Coolidge, $2; 3d, G. D. Moore, $1.
PARSLEY.—Two quarts:
1st, A. E. Hartshorn, $2; 2d, W. Warburton, $1.
BEANS.—Two quarts of Lima:
1st, Mrs. E. M. Gill, $3; 2d, V. Frost, $2; 3d, E. L. Lewis, $1.
SWEET CORN.—Twelve ears of any variety:
1st, A. F. Coolidge, $3; 2d, G. F. Wheeler, $2; 3d, E. L. Lewis, $1.

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EGG PLANT.—Four specimens of Round Purple:
1st, A. F. Coolidge, $3; 2d, E. L. Lewis, $2.
TOMATOES.—Twelve specimens of Aristocrat:
1st, V. Frost, $3; 2d, W. Heustis & Son, $2; 3d, A. Low, $1.
Comrade:
1st, A. F. Coolidge, $3; 2d, W. Heustis & Son, $2; 3d, A. Low, $1.
May's Favorite:
1st, A. F. Coolidge, $3; 2d, A. Low, $2; 3d, J. Thorpe, $1.
Any other variety:
1st, E. L. Lewis, Success, $3; 2d, E. L. Lewis, Stone, $2; 3d, W. R. Schaefer, New Imperial, $1.
MARTYNIAS.—Twelve specimens:
1st, A. Low, $2; 2d, E. S. Converse, $1.
PEPPERS.—Twelve specimens of Squash:
1st, A. Low, $2; 2d, L. Doran, $1.
Any other variety:
1st, E. L. Lewis, $2; 2d, W. Warburton, $1.

Gratuities:—

W. Heustis & Son,	Collection,	$5.
E. L. Lewis,	"	$5.
A. Low,	"	$4.
A. Nixon,	"	$3.
W. Warburton,	"	$3.
G. D. Moore,	"	$2.
C. W. Parker,	"	$1.
J. C. Stone,	"	$1.

OCTOBER EXHIBITION OF FRUITS AND VEGETABLES.

OCTOBER 3 AND 4.

CARROTS.—Twelve specimens of Long Orange:
1st, H. R. Kinney, $3; 2d, E. L. Lewis, $2; 3d, C. Scully, $1.
Twelve specimens of Intermediate:
1st, H. R. Kinney, $3; 2d, H. W. Anderson, $2; 3d, W. Warburton, $1.
POTATOES.—Twelve specimens of Carman, No. 1.
1st, E. L. Lewis, $3; 2d, H. W. Anderson, $2; 3d, G. F. Wheeler, $1.
Early Fortune:
1st, H. W. Anderson, $3; 2d, A. Low, $2; 3d, E. M. Bruce, $1.
Hebron:
1st, H. R. Kinney, $3; 2d, E. L. Lewis, $2; 3d, C. Pfaff, $1.
Early Rose:
1st, H. R. Kinney, $3; 2d, A. Low, $2; 3d, E. L. Lewis, $1.

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Any other variety:
1st, E. A. Adams, New Queen, $3; 2d, H. R. Kinney, Walter Raleigh, $2; 3d, H. R. Kinney, American Wonder, $1.

SALSIFY.—Twelve specimens:
1st, G. D. Moore, $3; 2d, V. Frost, $2; 3d, W. Heustis & Son, $1.

TURNIPS.—Twelve specimens of Flat:
1st, F. J. Kinney, $3; 2d, G. F. Wheeler, $2; 3d, G. F. Wheeler, $1.
Twelve specimens of Swedish:
1st, DeSouza Bros., $3; 2d, E. L. Lewis, $2.

ONIONS.—Twelve specimens of Danvers:
1st, W. H. Derby, $3; 2d, J. B. Shurtleff, Jr., $2; 3d, C. Pfaff, $1.
Red:
1st, C. Pfaff, $3; 2d, DeSouza Bros., $2; 3d, E. M. Bruce, $1.
White:
1st, A. E. Hartshorn, $2; 2d, E. L Lewis, $1.
Any other variety:
1st, E. M. Bruce, $3; 2d, A. Nixon, $2; 3d, A. E. Hartshorn, $1.

SQUASHES.—Three specimens of Bay State:
1st, W. Wheeler, $3; 2d, G. F. Wheeler, $2; 3d, A. E. Hartshorn, $1.
Hubbard:
1st, A. E. Hartshorn, $3; 2d, J. C. Stone, $2; 3d, G. F. Wheeler, $1.
Hybrid Turban:
1st, G. F. Wheeler, $3; 2d, A. Low, $2; 3d, E. L. Lewis, $1.
Marrow:
1st, E. L. Lewis, $3; 2d, V. Frost, $2; 3d, J. C. Stone, $1.
Any other variety:
1st, J. Thorpe, Marblehead, $3; 2d, A. E. Hartshorn, Golden Hubbard, $2; 3d, F. J. Kinney, Golden Hubbard, $1.

CUCUMBERS.—Pair of White Spine:
1st, G. D. Moore, $3; 2d, W. H. Burpee, $2.

GREEN FLESH OR SALMON FLESH MELONS.—Four specimens:
1st, A. E. Hartshorn, $3; 2d, A. E. Hartshorn, $2; 3d, A. E. Hartshorn, $1.

WATERMELONS.—Pair:
1st, J. Thorpe, $3; 2d, J. Thorpe, $2; 3d, E. L. Lewis, $1.

BRUSSELS SPROUTS.—Half-peck:
1st, A. E. Hartshorn, $3; 2d, A. E. Hartshorn, $2.

CABBAGES.—Three specimens of Drumhead, trimmed:
1st, E. Parker, $3; 2d, W. Warburton, $2; 3d, E. R. Teele, $1.
Savoy:
1st, A. E. Hartshorn, $3; 2d, E. L. Lewis, $2; 3d, E. L. Lewis, $1.

CAULIFLOWERS.—Four specimens:
1st, E. R. Teele, $4; 2d, W. H. Teele, $3; 3d, C. M. Handley, $2.

CELERY.—Best kept during the exhibition, four roots of Paris Golden:
1st, A. Nixon, $4; 2d, A. F. Coolidge, $3; 3d, W. Heustis & Son, $2.

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Any other variety:
1st, A. Nixon, $4; 2d, W. Warburton, $3.

ENDIVE.—Four specimens:
1st, A. E. Hartshorn, $3; 2d, A. Nixon, $2; 3d, E. L. Lewis, $1.

LETTUCE.—Four heads:
1st, W. Warburton, $3; 2d, A. E. Hartshorn, $2; 3d, A. Nixon, $1.

PARSLEY.—Two quarts:
1st, W. Warburton, $2; 2d, C. Pfaff, $1.

SWEET CORN.—Twelve ears:
1st, A. E. Hartshorn, $3; 2d, O. R. Robbins, $2; 3d, H. W. Anderson, $1.

EGG PLANT.—Four specimens of Round Purple:
1st, A. F. Coolidge, $3; 2d, E. L. Lewis, $2; 3d, A. E. Hartshorn, $1.

TOMATOES.—Twelve specimens of Aristocrat:
1st, V. Frost, $3; 2d, A. F. Coolidge, $2; 3d, A. Nixon, $1.

May's Favorite:
1st, A. F. Coolidge, $3; 2d, C. Pfaff, $2; 3d, A. Low, $1.

Stone:
1st, J. Thorpe, $3; 2d, A. F. Coolidge, $2; 3d, A. Nixon, $1.

Any other variety:
1st, A. F. Coolidge, $3; 2d, J. Thorpe, $2: 3d, A. Low, $1.

PEPPERS.—Twelve specimens of Squash:
1st, A. Low, $3; 2d, A. Low, $2; 3d, A. Nixon, $1.

Any other variety:
1st, E. L. Lewis, Chinese Giant, $3; 2d, A. Low, Chinese Giant, $2; 3d, W. Warburton, Ruby King, $1.

CULINARY HERBS, GREEN.—Collection, named:
1st, W. Warburton, $5; 2d, A. Nixon, $4.

Gratuities:—

W. Heustis & Son, Collection, $5.
E. L. Lewis, " $5.
A. F. Coolidge, " $3.
A. Low, " $3.
C. W. Parker, " $3.
Goodell Farm, " $2.
G. D. Moore, " $2.
Mrs. E. M. Gill, " $1.
N. W. T. Knott, " $1.
W. Wheeler, " $1.
Mr. Simmons, New Seedling Potato, Simmons' Model, First Class Certificate of Merit.

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CHRYSANTHEMUM SHOW.

NOVEMBER 6, 7, 8 AND 9

Special Prizes.

CELERY.—Eight roots, commercial grown:
1st, A. Nixon, A Silver Medal; 2d, W. Heustis & Son, A Bronze Medal.

Regular Prizes.

PARSNIPS.—Twelve specimens of Long Smooth:
1st, W. Heustis & Son, $3; 2d, H. R. Kinney, $2; 3d, A. E. Hartshorn, $1.
Hollow Crown:
1st, W. Warburton, $3; 2d, A. E. Hartshorn, $2; 3d, H. R. Kinney, $1.
SALSIFY.—Twelve specimens:
1st, V. Frost, $3; 2d, J. C. Stone, $2; 3d, W. Heustis & Son, $1.
CUCUMBERS.—Pair:
1st, W. C. Winter, $3.
CABBAGES.—Three Red, trimmed:
1st, E. L. Lewis, $3; 2d, E. L. Lewis, $2; 3d, A. E. Hartshorn, $1.
Savoy:
1st, A. E. Hartshorn, $3; 2d, E. L. Lewis, $2.
BRUSSELS SPROUTS.—Half-peck:
1st, A. E. Hartshorn, $3; 2d, A. E. Hartshorn, $2; 3d, G. F. Pierce, $1.
CAULIFLOWERS.—Four specimens:
1st, W. H. Teele, $3; 2d, E. R. Teele, $2; 3d, C. M. Handley, $1.
CELERY.—Four roots:
1st, W. H. Heustis & Son, $3; 2d, A. Nixon, $2; 3d, W. Warburton, $1.
ENDIVE.—Four specimens:
1st, A. Nixon, $3; 2d, E. L. Lewis, $2; 3d, A. E. Hartshorn, $1.
LETTUCE.—Four heads:
1st, G. D. Moore, $3; 2d, A. F. Coolidge, $2; 3d, J. C. Stone, $1.
CORN.—Yellow or field, twenty-five ears, traced:
1st, Goodell Farm, $3; 2d, C. Scully, $2; 3d, E. M. Bruce, $1.
TOMATOES.—Twelve specimens, grown under glass:
1st, Mrs. F. L. Ames, $3; 2d, Mrs. F. L. Ames, $2.

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Gratuities:—

A. Low, Turnips, $1.
Mrs. J. Lewis, Onions, $1.
N. T. Kidder, Scotch Kale, $1.
W. Heustis & Son, Collection, $3.
A. E. Hartshorn, " $2.
G. D. Moore, " $2.
W. Warburton, " $2.
N. W. T. Knott, " $1.

WARREN HOWARD HEUSTIS,
VARNUM FROST,
WALTER RUSSELL,
AARON LOW,
GEORGE D. MOORE,
JOSHUA C. STONE,
MICHAEL SULLIVAN.

Committee on Vegetables.

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Patten & Co.'s Carnation House, Tewksbury, Mass.

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REPORT

OF THE

COMMITTEE ON GARDENS.

FOR THE YEAR 1902.

By PATRICK NORTON, CHAIRMAN.

The past year has been full of activity for this committee and we are very much pleased to observe more care manifested in all the departments of the horticulture we have been called upon to inspect.

The season has been quite remarkable for its coolness, yet vegetation was more than a week in advance of last year, making a change necessary to an earlier date of some of the exhibitions.

PATTEN & CO.'S CARNATION HOUSE, TEWKSBURY.

The first place that we were called upon to visit was the Messrs. Patten & Co.'s house of carnations at Tewksbury, on February 13.

The house was two hundred and fifty feet long by twenty-one feet wide and was filled with the very best plants to be had, splendidly grown and profusely bloomed.

We noticed some very fine seedlings of their own production and their ambition seems to be to cultivate only the best kinds whether originated by others or by themselves.

The house was in fine order, the plants very vigorous and splendidly flowered on very long stems. Their method of growing carnations is to be commended. At our request Mr. M. A. Patten has kindly furnished the following notes on the subject.

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PATRICK NORTON, ESQ., *Chairman Committee on Gardens.*

DEAR SIR:—To write upon the subject "How we grow Carnations" seems superfluous, after the quantity of carnation literature imposed on the gardening fraternity the past few years.

Our method is practically the same as used by most growers.

In January, February, or March, healthy side shoots on the flowering stem are rooted in a temperature of 50 degrees overhead and about 10 degrees more in the sand, and when rooted we put them in small pots, and repot into a larger size when necessary.

Some are kept to plant on the benches for inside growing. The rest are planted out the last of May on land that has been well manured and well worked over, in rows about eighteen inches apart, eight to ten inches in the row, according as the variety is a large or small grower. A sprinkling of bone is a good tonic. Keep the weeds down and cultivate once a week. Top the plants when the flower shoots begin to push up. Inside culture is practically the same—good ventilation and plenty of spraying, to keep down the red spider.

In August we plant the outside grown carnations in the greenhouse, shading if necessary a few days. They should be supported as soon as planted to keep them from falling over when syringing. Give them all the air they will stand. After they are well established we discontinue watering overhead. Disbudding should be attended to as the plants grow. Night temperature should be fifty to fifty-five degrees, according to the variety and the day temperature about fifteen degrees higher.

Our flowers are cut the day before shipment and placed in a cool room.

The houses are fumigated every week or ten days, for which we prefer aphis punk.

M. A. PATTEN.

TEWKSBURY, MASS.
March 13, 1903.

MRS. DAVID NEVINS' ESTATE, METHUEN.

On May 28 we visited the residence of Mrs. David Nevins at Methuen. The old homestead had been reconstructed and we

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were received into what appeared to be a new house with all the modern conveniences. The grounds about the house were made beautiful by the grouping of handsome shrubbery and flowering plants and the general aspect of the place reflected good taste in the arrangements of a very comfortable home. Mrs. Nevins, being a very active woman, is constantly improving her estate by bringing yearly large parcels of realty under more intense cultivation than it ever had previously, thus expanding her domain and at the same time beautifying the town.

George D. Moore's Cucumber House and Vegetable Garden, Arlington.

The next visit was on June 18 to George D. Moore's at Arlington to inspect a house of cucumbers and a vegetable garden.

It was evident that Mr. Moore and his son keep up their reputation in growing vegetables whether under glass or in the open ground, for the results of good cultivation were evident to the most casual observer. The liberal use of fertilizers and the knowledge of how and when to apply them were manifest in the copious crops displayed on this occasion. The Moore's method of cultivation is to be commended. His system of driven wells is a complete success, giving him all the water for irrigation and other purposes he can consume.

Hon. E. S. Converse's Estate, Malden.

The fourth visit was to the fine old estate of the Hon. E. S. Converse at Malden on July 16, to inspect a house of grapes as grown by D. F. Roy, head gardener. The house contained sixteen vines each bearing from twelve to fifteen bunches of grapes. The vines are now ten years old and Mr. Roy's method of renewal is to take up a new shoot from near the base of the old vine and when large enough to "go alone," cut away the old vine. This will give him in a short time new young vines throughout the house.

The whole estate is in a very satisfactory condition forming a connecting link between the old style gardening and the new. The old-fashioned plants which have become endeared to their

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owners by many years of association are judiciously planted with the newer developments in horticulture and they make the combination very pleasing.

Greycourt, the Estate of Charles H. Tenney, Methuen.

The fifth visit this year was on June 27 to Greycourt, the beautiful estate of Mr. Charles H. Tenney at Methuen. The elegance of this estate might be taken as a model for any gentleman about to make a home for himself. It comprises every convenience and luxury that can be incorporated into any estate and these comforts are so judiciously planned as to make the place "a thing of beauty and a joy forever." Our visit this spring was more particularly to see the unfolding of the trees after their winter's sleep. Nothing could be more beautiful to the lover of nature than the new growth on all the rare shrubs, trees and conifers. The blue spruces and firs were wonderfully handsome in their new clothes and excited praise from all who had the pleasure of viewing them.

Mr. Tenney's object seems to have been, in building so beautiful an estate, to give himself the satisfaction of owning a "paradise on earth" to which he can invite his friends to enjoy with him every luxury, both within doors and without, which money can buy. It is so beautifully arranged as to be commended by all who visit Greycourt. This estate is entered for the Hunnewell Triennial Premiums.

Miss E. Jackson Clark's Estate, Pomfret, Conn.

The sixth visit this year occurred on July 23, to La Plaisance, the estate of Miss E. Jackson Clark at Pomfret, Connecticut, to inspect houses of grapes and fruits as grown by John Ash, the superintendent of the estate.

The grape house contains eighteen vines of five varieties, remarkably well fruited, with bunches averaging about four pounds each, highly colored, and luscious to the taste. The estate comprises about eighty acres, sixty acres of which are used for farming and garden purposes, while about twenty acres adjoining the mansion

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house are used for lawn and ornamental planting of rare trees and shrubs. The fruit house contains peaches and nectarines of no less than seven different varieties of the best of these luscious fruits. Other glass structures are devoted to growing melons, tomatoes, cucumbers, and ornamental plants, including sixteen hundred chrysanthemums. The estate is replete with everything to make it a desirable and sumptuous home. Mr. Ash furnished this committee with a letter which is appended hereto, showing his method of procedure in growing such fine grapes; also a photograph showing the results attained; all of which we submit to other growers for their perusal and observation.

THE CULTURE OF HOT HOUSE GRAPES BY JOHN ASH.

I enclose photograph of part of my house of grapes entered for competition. The dimensions of house are as follows:—Thirty-three feet long by twenty-five feet wide; roof curvilinear. In it I have planted four vines of Muscat of Alexandria, four of Gros Maroc, two of Lady Downs, four of Gros Guillaume, and four of Black Alicante. The house was built and one year old vines planted in 1897, so that my vines are now six years old and they have been fruited four years. The border is an inside one, so that I have absolute control of giving freely or withholding water as the vines may require.

This house is my second or late house, and I usually commence operations, for starting vines into growth, about February 20th, by putting on a gentle artificial heat maintaining a temperature of from 45° to 48° at night, with a rise of five degrees by day when artificial heat is required, allowing the sun heat to run up to 80° with ventilators opened slightly, continuing this temperature until the buds show signs of life when I raised the temperature ten degrees admitting air on every bright day, carefully avoiding cold draught on young and tender foliage, which "young leaves" appear in two or three weeks after buds show signs of life. At this time I raise to my maximum temperature of 65° nights and 70° by day artificial heat; sun heat from 80° to 88° with a free circulation of air on every favorable occasion.

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Syringing.

Vines are syringed freely morning and afternoon on all bright days until they are in bloom when syringing is discontinued and a drier atmosphere maintained, only sprinkling floor about noon on bright days, until fruits are set, when we again syringe freely until grapes commence coloring, when we cease putting any water on foliage or fruits.

Watering and Feeding.

The border is given a thorough soaking with tepid water when first heat is introduced, and again as soon as bunches show themselves. Then after grapes have been thinned, weak liquid manure is given to help to swell up the berries and continued as the border may require until grapes show color, when we cease giving any more liquid manure, and use only clear water, until fruits are ripe, when water is given only in sufficient quantities to prevent shriveling of berries, and a drier atmosphere maintained, with abundant air on all favorable occasions.

MRS J. C. WHITIN'S ESTATE, WHITINSVILLE.

On August 1, the committee visited the estate of Mrs. J. C. Whitin at Whitinsville, to inspect a house of foreign grapes and a house of other fruits as grown by Wm. McAllister, head gardener on the estate. The grape houses are two in number but the one we were called to inspect contained ten vines six years old averaging about twenty bunches to each vine. The varieties consisted of Grizzly Frontignan, Lady Downs, Muscat of Alexandria, Mrs. Pearson, Mrs. Prince, Black Alicante, Muscat Hamburg, Wethersfield Court, and Golden Queen. The bunches were well colored and the fruit was of luscious quality, but the bunches would have been larger if the vines had not been allowed to carry so many of them.

The fruit house was a great surprise to the committee, as it was of the most approved construction and contained the most splendid collection of fruit ever seen by the committee. The house was a span roof running east and west with a walk down the

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Grape House of Miss E. Jackson Clark, Pomfret, Conn.

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centre with trellises on each side across the house with peaches and nectarines trained espalier to each, and heavily fruited. Between the trellises stood forty pots of fruit, also well filled with peaches, etc.

Some of the peaches we measured were three inches in diameter and of perfect quality. It is with great pleasure that we award to this fruit house the first special prize offered by Edward Hatch for fruit houses.

This house was so exceptionally fine that we cannot endorse too much its construction and method of planting and fruiting, and as a slight token of our appreciation we award it the Silver Medal of the Massachusetts Horticultural Society.

We are pleased to add to this report a statement from William McAllister on the culture of hothouse fruits.

The Fruit-house of Mrs. J. C. Whitin, Whitinsville, Massachusetts, was built in the summer of 1900, size 164x25 feet. It is heated with hot water, two inch wrought iron pipes used. The house is an even span running east and west and trellises put across that the trees may get the full benefit of the sun. Trees are much easier taken care of than where they are trained up the roof; especially when syringing, a person can get at both sides of the trees without any trouble.

In this house are planted twenty-two trees on trellises and forty in pots. One third of these are nectarines, our preference being peaches. We think the best varieties are Royal George, Barrington, Noblesse, Crimson Galande, Early Silver, Princess of Wales, Sea Eagle, Elberta, Alexander Noblesse, Golden Eagle, and for nectarines, Cardinal, Early Rivers, Milton, Lord Napier, Newton, Pine Apple, Rivers Orange, and Victoria. These are good varieties of nectarines and need the same treatment as the peach. This house was planted the first week in November. We believe in planting in the autumn as soon as the trees shed their leaves. Our time for pruning is usually in January, and allow them to start to grow in February, having them flower by the end of March or the first week in April with fruit in July. The temperature must be kept rather low, not over 45° at night at first, increasing temperature as they advance in growth.

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The soil used for the borders is a turfy loam from good pasture land. In this way I have had very good results.

WILLIAM MCALLISTER.

H. H. ROGERS' ESTATE, FAIRHAVEN.

This estate is entered for the Hunnewell Triennial premiums and this was our second visit. The general character of the estate is the same as last year although a considerable plot of ground had been reclaimed and brought under cultivation. The estate consists of about thirty acres which is nearly all level land with a portion in forest. On this Mr. Garthley, the gardener, is yearly encroaching and bringing it into such shape as to grow flowers and flowering shrubs.

The estate has all the electric power needed to light the buildings, the grounds, and run all the machinery needed to carry on a large establishment. Mr. Rogers' last work in beautifying the town of Fairhaven is the building of an elegant and costly church edifice for the use of one of the religious societies of the town. His benefactions to the town in building public edifices are truly wonderful and we are glad to note the public spirit he manifests.

We were invited to visit these buildings, which we did with great appreciation, and afterwards were driven all over the old whaling town of New Bedford and into its beautiful suburbs. A day of "restful pleasure" was enjoyed by the committee.

EDWARD J. MITTON'S CROTON HOUSE AT BROOKLINE.

On the 21st of August we were called upon to inspect a house entirely filled with crotons. This was a new experience for your committee as it is well known that crotons are cultivated entirely for their foliage. Mr. J. Lawson, the gardener, is particularly fond of these quaint plants and grows them to perfection.

The house contained eighty plants of about fifty varieties and their luxurious growth showed the high cultivation bestowed on them by the gardener. The colorings of the leaves were remarkable and the endless shapes of the foliage were still more so.

The house had no other plants therein, yet looked at as a whole it presented the appearance of a house filled with endless varieties of flowering plants in full bloom.

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It was a remarkable house and once seen will long be remembered.

J. B. Lawrence's Dahlia Farm, Abington.

On the 9th of September we visited the dahlia farm of Mr. and Mrs. Lawrence which consisted of one hundred varieties of dahlias and two thousand plants. They were of the best kinds, were in full bloom, and made a grand appearance. Some of the best were named as follows:

King of the Cactus,	Mrs. Gladstone,	Frank Smith,
Maid of Kent,	Henry Patchett,	Grand Duke,
Nero,	Lucy Faucett,	Catharine,
Mrs. Dexter,	John Lamont,	Fernleaf Beauty,
Dr. Kirtland,	White Swan,	Meteor,
Fanny Purchase,	Livoni,	Mrs. Snow.
Wm. Agnew,	Alice Emily,	

William P. Lothrop's Dahlia Farm, East Bridgewater.

Mr. Lothrop's farm, consisting of six acres of dahlias, was inspected by your committee on the 16th of September and then it was in full bloom. There were over 25,000 plants, comprising over 100 varieties, and each variety was planted by itself. The great show of brilliant color and variety of shapes made a gorgeous spectacle. One portion of the garden was made to grow dwarf plants, by judicious pruning; other parts were left to grow naturally supported by stakes.

Mr. Lothrop has kindly prepared at the request of the Garden Committee the following notes on the dahlia and its cultivation.

Mr. Patrick Norton, Dorchester, Mass.

My first interest in dahlias was aroused in 1893 when I bought one dozen for my own pleasure.

There were supposed to be twelve named varieties and I looked forward with pleasure to the blooming season; but when it arrived I found that my attention had been lavished on a collection containing three inferior kinds.

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The season following I bought eighty-eight varieties from various American seedsmen and found these almost wholly unsatisfactory.

I immediately decided that the majority of American dahlias were second rate or less; also that there was a market here for the finer kinds.

Before the next spring a partnership was formed under the firm name of Lothrop & Higgins for the purpose of establishing a dahlia specialty business.

That year we imported varieties from England, Holland, and Germany, and were very successful, finding the demand far greater than our ability to supply. Since then we have continually searched Europe for new and better kinds and have been amply rewarded by an unprecedented success at the New England and New York exhibitions.

In the autumn of 1901 Mr. Higgins retired from the firm.

All through the rapid growth of the business I have found that the increase in the number of my imported varieties has been more than paralleled by an increase in public interest, and in the demand for the newer kinds.

In regard to flower shows, I wish to say that the fact of these exhibitions being public educators was never more evident than since dahlias commenced to rise in popularity. I have obtained varieties in Germany to test, in lots of one or two of a kind, and have been so pleased with some special bloom that I exhibited it at the Mass. Hort. Society; before the time for planting arrived the next spring I had received orders and inquiries for this variety from six states.

In addition to importing I have obtained several new ones by scientific crossing; the most remarkable instance is the result of a cross between the Grand Duke Alexis and A. D. Livoni, the progeny in plant, shows all the traits of the G. D. Alexis, also in the shape and size of the bloom, but this has the true pink color of the A. D. Livoni.

In regard to planting: Here in New England the proper time is from May 15th to June 10th.

It must be understood of course that this is not for *early* blooms but for *best* blooms. If one desires smaller flowers and a greater

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Dahlia Farm of Wm. P. Lothrop, East Bridgewater, Mass.

A field of "Perle de la tête d'Or."

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quantity he should plant by May 15, nipping every bud which appears before August 1st. By this time the plant will have attained its full growth and its whole energy will be thrown into blooming.

The single stem branching system offers the best and prettiest method of culture. It is as follows:

One shoot only is allowed to grow. When the shoot has two pairs of leaves and an undeveloped growth on the top, it is pinched back as far as the upper leaves. Four branches will then start, one at each leaf. When the plant is grown it will have a short, strong, single stem, which comes only an inch or two above ground, and four long branches which are strong enough to hold themselves up without stakes, giving the plant a neat bushy appearance.

If planted between the two dates, as first suggested, they will reach flowering size at about the proper time. There are, however, a few kinds which should invariably be staked; such as Frank Smith, Beatrice (cactus), Grand Duke Alexis, Dr. J. P. Kirtland, Ernest Glasse, etc.

In regard to fertilizer: I plan to change each year; one year using barn manure; another prepared fertilizer; the next raw chemicals, such as nitrate of soda or muriate of potash.

My experience has taught me that the kind and amount of fertilizer used are not of as great moment as is the cultural care.

Just as soon as the last tuber is covered I commence to cultivate and continue doing this each week and sometimes twice a week until the blooming season arrives. The last few times using a fine twelve-tooth cultivator. I then give the second hoeing which is also the final one. In this way the ground is left as fine and smooth as a garden.

Regarding storage: The tubers are lifted immediately after the first killing frost, dried in the field three or four hours and laid in a dark shed. When all are dug they are separated and all packed in dry sand in a cellar which ranges in temperature from 38 to 42 degrees.

W. P. Lothrop.

East Bridgewater, Mass.

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Greycourt, the Summer Home of Charles H. Tenney, Methuen.

On October seventh your committee was called upon to make their third year's call at this beautiful home, thus completing the time of entry for the H. H. Hunnewell Triennial Premiums.

The more we see of this place the better we like it and we can now more fully recommend it as a model of perfection to gentlemen about to build homes to live in. In the spring time the trees, just showing their new growth, were beautiful, but in the fall they had put on the still more beautiful appearance of maturity, winding up the season with all the colors with which nature's alchemy could endow them.

They were noble trees and everyone a splendid specimen of its kind with plenty of space in which to expand and develop. The President of our Society walked all over the place one morning in October and when asked his opinion of it he replied that it was "the noblest place in the Commonwealth," and this only confirms the judgment of your committee.

Mr. Tenney is always beautifying his estate and his last endeavor is the completion of a splendid bowling green where the noble and manly sport can be enjoyed on a gentleman's estate. His inclination seems to lead him in the direction of building such structures as will beautify the estate and at the same time contribute to the pleasures of his numerous guests.

We take sincere pleasure in awarding this estate the H. H. Hunnewell Triennial Premium.

Mr. Tenney has had in his employ ever since he began to improve this estate a faithful and enthusiastic gardener, Mr. Gall, who has carried out in a masterful way all the instructions and plans for beautifying these grounds; and how well he has done his work the estate as it stands today speaks for itself.

Mrs. A. W. Spencer's Chrysanthemum House, South Framingham.

On the 30th of October we visited the estate of Mrs. A. W. Spencer, at South Framingham, to inspect a house of chrysanthe-

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mums planted on benches. There were three hundred and fifty plants of thirty varieties of the best kinds grown. These were all grown for one flower each and presented a beautiful appearance. Alex McKay the gardener, also had in other houses four hundred and thirty-five plants in pots which were fully as handsome blooms as those on benches, and he likes to grow them in pots because they are so easily moved to make room for other incoming plants. Mr. McKay is to be commended for his proficiency in growing the Queen of Autumn.

Hon. E. S. Converse's Estate, Malden.

The last visit of the season was on the 4th of November to inspect two houses of chrysanthemums, one grown on benches and the other house filled with large plants, interspersed with fine foliage plants, to produce a fine effect.

The house planted on benches contained five hundred plants of one hundred and sixty varieties, well flowered, and presented a fine appearance. The great number of varieties added very materially to the attraction.

The house of chrysanthemums arranged for effect with other plants was an unqualified success and Mr. D. F. Roy had occasion to feel elated at the success of his endeavors.

The house was beautifully arranged and its beauty was enhanced by having so many standard chrysanthemums to break up the otherwise monotonous appearance of the low-growing plants. We commend Mr. Roy's good taste and proficiency in growing and arranging chrysanthemums.

Mr. Roy has sent us the accompanying notes on the cultivation of the chrysanthemum which will add to the value of this report.

Mr. Patrick Norton.

Dear Sir:—In answer to yours of the 26th instant I would say that we propagate our chrysanthemums, for growing on benches, the last week in April. When they are well rooted we put them in two and one-half (2½) inch pots using loam, leaf-soil, and sand; then we plunge the pots in ashes in a cold frame, which gives us short-jointed stocky, plants. About the second

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week in June we plant in benches, using a rich compost consisting of sod cow manure and bone meal. As the soil in this locality is rather light we add one load of clay to every three of loam. When planting we firm the soil well around the plant, leaving a hollow around each one for water. We are very careful about watering until the plants get hold of the soil. Then they take more water but we never allow the soil to be saturated. About the first week in August we give a mulch of well-rotted cow manure which keeps the roots cool and acts as a fertilizer. During the hot months we syringe three times a day.

We feed with liquid manure when in our judgment the plants require it, using sheep, cow, and horse manure at intervals. Commercial fertilizers we use very sparingly; possibly a dressing of Clay's and a dose of nitrate of soda, a few times during the season. The night temperature is kept between 50° and 60°. When the blossoms begin to open we use shading made of light cloth.

The foregoing remarks practically cover our mode of cultivating the Queen of Autumn.

Yours truly,

D. F. Roy.

Malden, Mass.

The Prizes and Gratuities awarded this year are as follows:

H. H. Hunnewell Triennial Premium.

For an estate of not less than three acres, which shall be laid out with the most taste, planted most judiciously, and kept in the best order for three consecutive years:

First, Charles H. Tenney $160 00

Special Prizes from the John A. Lowell Fund.

For the best house of Chrysanthemums, arranged for effect with other plants:

First, Hon. E. S. Converse 30 00

For the best house or houses of Chrysanthemums grown on benches:

First, Hon. E. S. Converse 30 00

Second, Mrs. A. W. Spencer 20 00

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Special Prizes offered by Edward Hatch.

For the best Fruit House, plants grown in pots or tubs included:	
First, Mrs J. C. Whitin	$30 00
Second, Miss E. J. Clark	20 00

Society's Prizes.

For the best House of Foreign Grapes:	
First, Miss E. J. Clark	30 00
Second, Mrs. J. C. Whitin	20 00
For the best House of Carnations:	
First, Patten & Company	30 00
For the best Vegetable Garden:	
First, George D. Moore	30 00
For the best House of Cucumbers:	
First, George D. Moore	30 00

Gratuities.

Hon. E. S. Converse, House of Grapes	20 00
E. J. Mitton, House of Crotons	25 00
J. B. Lawrence, Dahlia Farm	15 00

William P. Lothrop, Dahlia Farm, a Silver Gilt Medal.

Miss E. J. Clark, Superior Cultivation of Grapes, a Silver Medal.

Mrs. J. C. Whitin, Superior Cultivation of Nectarines and Peaches, a Silver Medal.

Respectfully submitted,

PATRICK NORTON,
ARTHUR H. FEWKES,
J. WOODWARD MANNING,
E. W. WOOD,
WARREN H. HEUSTIS,
J. H. WOODFORD,
JACKSON T. DAWSON,
HENRY W. WILSON.

Committee on Gardens.

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REPORT

OF THE

Committee on School Gardens and Children's Herbariums

FOR THE YEAR 1902.

By HENRY LINCOLN CLAPP, CHAIRMAN.

Weeding. — George Putnam School Garden.

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The experience in gardening obtained during the summers of 1900 and 1901 made it evident that a smaller number of beds of larger dimensions would give more satisfactory results. The beds (3½ by 10 ft.) were too small to furnish employment to the young gardeners except for a very short period.

Perhaps the gardeners had put their beds in perfect order after school hours during the previous afternoons, and could find no work to do when the afternoon (Monday) appointed for gardening came. Then, naturally enough for children, they found

Making beds on rough plowed land. — George Putnam School Garden.

something to do that was not on the school program. Hoes were put to very singular uses in the short absences of the director, lumps of earth took wings, and foot-prints of human beings made intaglios in the soft earth of the beds. These misplaced impressions were observed with a good deal of solemnity by the director and aberrant gardeners. The latter always appeared to know more about planting seeds than planting footsteps, probably from the fact that the former is done so deliberately and the latter so precipitately.

Under these natural conditions eighty pupils seemed a rather generous number for one pair of eyes which were of the ordinary

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wide-angled species, but, nevertheless, could take in only about one quadrant at a time.

Moreover, a much greater variety of plants can be raised on a large bed than on a small one. This makes the work far more interesting. The produce of a large bed amounts to something; it will make some show on the dinner table. The work seems more like real work and less like play work.

Accordingly the beds were cut down to forty, each 8 by 10 ft. This was done in a very simple manner. The path between each pair of old beds was dug up and leveled up by the addition of soil in such a manner as to unite the two beds into one large one. No new paths had to be made.

Seedlings in May. — George Putnam School Garden.

The forty pupils who were selected to cultivate the beds were much more interested and far steadier than the eighty who had worked the year before. They could be left to work without an overseer. They considered their work as the real thing. They raised immense parsnips, summer squashes, radishes, lettuce, carrots, beets, beans, corn, kohl-rabi, etc., besides a greater variety of flowering plants.

The janitor frequently found them at work until six o'clock P. M. and even later, and on Saturdays also. Some kept their

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gardens in fine order during the summer vacation, though they had no director to direct and encourage them.

One day in October two photographers and a reporter from the office of the "Boston Globe" came out to photograph and write an account of the garden. Each pupil was asked to state what he had raised. Three pictures were taken and they appeared afterward in the "Globe." One represented a boy with an arm load of huge parsnips which he carried home to eat.

Monday, October 27, the pupils scraped up bushels of leaves that had fallen from the ash and maple trees growing about the school grounds and added them to the weeds and vegetable rubbish of their gardens.

Weeds for the fire. — George Putnam School Garden.

Then the director set fire to one heap placed in the centre of one bed, and soon the fire was carried to other heaps until there were a score of small fires sending off flames and volumes of

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smoke. Then there was hurrying and scurrying to get more leaves to keep the fires going, and there was a scene of activity that is seen on the premises only once a year. The result was the conversion of an immense amount of rubbish into ashes with which the beds will be fertilized, not to speak of the admirable exercise and exhilaration of mind attending the whole work. Quite different from book learning.

Lining out beds. — George Putnam School Garden.

It is a difficult matter for many pupils to keep their beds in line because they stick so closely to their own beds and view them from so short a range. They are repeatedly directed to go some distance away from their own beds and then compare their edges with those of other gardens. Pupils from twelve to fifteen years of age do not know what "sighting" means until they are taught in the garden.

November 3 the paths were straightened and November 10 the bulbs were planted. Advice had been previously given as to the most satisfactory bloomers, the best bulbs for the money spent, the manner of planting,— depth, distance apart, preparation of soil, etc.

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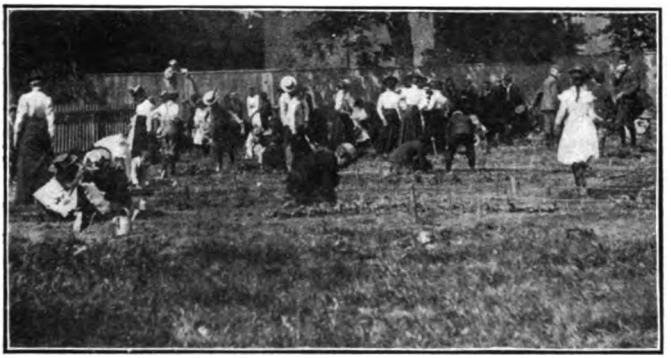

Visitation Day. — George Putnam School Garden.

Weeding after School. — George Putnam School Garden.

Some pupils worked till dark; some carted in dressing on Saturday; and all worked hard without being conscious of it. It is the bodily action that quickens the mental and makes garden work suitable for and enjoyable to children.

SUCCESSES AND FAILURES.

The gardens established by the National Cash Register Company, Hartford School of Horticulture, Twentieth Century Club

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of this city and Hyannis State Normal School are all in a flourishing condition because they have a good financial backing.

The gardens in Medford, Wenham, Trenton, and Louisville, Kentucky, I have reason to believe, have failed, and mainly, in my opinion, because they did not have adequate financial support. The George Putnam School garden seems to be the only one without outside aid that is still carried on.

It is interesting to learn that Mr. Philip Emerson, Principal of the Cobbet School, Lynn, Mass., has started a school garden, which it is expected will be entered next summer for one of the school garden prizes offered by this Society.

ADEQUATE SUPPORT OF SCHOOL GARDENS.

School gardens should be supported as other institutions of learning are supported, if good results are expected. No doubt, the school garden in the beginning may be worked with much enthusiasm, partly because it is a novel and reasonable undertaking; but hard work which only entails money obligations to a considerable amount soon diminishes the enthusiasm of both teachers and pupils. To work your passage and pay, too, soon comes to border on drudgery.

Simply to put seed into the ground expecting nature to do the rest in producing a handsome crop is expecting too much. There are fertilizers, seeds, tools and perhaps young plants to be bought every year. To leave the garden to take care of itself three months in summer is not the way to ensure fine crops in autumn. Continuous care of plants is necessary; and the only way to provide for that is to employ a director and pay him for directing. Premiums for the best results would also promote the work. This is the way the Dayton boys' gardens are carried on so successfully. So the ideal summer school, or vacation school, might be found in a school garden.

But weeds do not make much progress in a single night, and to hoe a small bed every day would be quite unnecessary. Other opportunities for the children's activities must be furnished—swings, teeter boards, ladders, sand piles, vaulting bars, etc.,—all of which the Massachusetts Civic League has provided in their establishment on Columbus Avenue, Boston.

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Here is an opportunity for any enterprising Society to do a great work in cultivating horticultural tastes in children and at the same time win an enviable reputation for service of the greatest importance. The opportunity has been seized already. It is not repeating too much to say again that the National Cash Register Company, Twentieth Century Club, Massachusetts Civic League, Hyannis State Normal School, and Hartford School of Horticulture are paying all the expenses of gardens from year to year. So all the advantages of school gardens will be sure to be made manifest by these Societies or schools.

It would be quite proper for any well-endowed Society to undertake a similar work,—the actual support of a school garden to a successful result. A hundred dollars a year would do it. Probably fifty dollars would suffice where a garden has been made on land free of cost.

At present this Society on a small amount of money (this year $60) is doing as much as can be done, offering premiums and printing and circulating reports. But school gardens established by means of the encouragement of these premiums, without other means of support cannot endure. They cannot live on reports, however spicy and well illustrated they may be. They never should be expected to be self-supporting.

Imagination is quite unable to picture the progress that would be made in horticulture and agriculture in Massachusetts in a few years, if a few thousand dollars a year were devoted to the support of school gardens where the culture of flowers, vegetables and fruits, large and small, might be practiced. This kind of seed ought to be planted, and those who really desire to do the very best service are planting it.

The honors that should be ours should not go to others simply on account of inadvertence, if there is no other reason.

The words of Ex-President Appleton on the occasion of the dedication of the new Horticultural Hall, "the encouragement of window gardening and school gardens is a most commendable feature of our work," should mean something substantial on which practical work can be founded and sustained. In fact, Massachusetts should take up the work.

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HALIFAX, N. S., HOME GARDENS.

August 27, 1902, Mr. A. H. McKay, Superintendent of Schools in Halifax, N. S., called upon me and stated that the children of that city have been induced to make and cultivate gardens at their homes, for the reason that they will be likely to take better care of their home gardens than school gardens during the summer vacation, and they can suit their own convenience in working in them. Moreover, they will not be required to walk any distance worth mentioning and water will always be available, which is a very important matter in maintaining a garden successfully.

As previously intimated, the most serious drawback in the conduct of school gardens is their general neglect during the summer vacation, unless a director is employed to meet the children regularly, or substantial money prizes are offered for the best gardens.

A grant of money by the city of Halifax ensures the establishment and maintenance of the children's home gardens. That is an example worth following by the city of Boston or any other that would be in the front rank of educational and civilizing processes. The matter should not be left to be undertaken and carried through by clubs and private individuals.

President Eliot says work is the greatest civilizer, and there is no better work for children than that found in a school garden or a garden at home. The school garden is, perhaps, more educative while the children are going to school, because the reasons for results are given while the plants are growing; theory and practice are properly connected. In the home garden explanations are largely wanting, provision for success or failure is far less certain, and what is learned comes more circuitously and therefore more slowly.

HOME GARDENS IN ST. LOUIS.

The Sunday "Post-Dispatch" of St. Louis in 1902 offered thirteen prizes for home gardens made by children under sixteen years of age. Two hundred seventy-one children entered the contest. The Englemann Botanical Club furnished flower seeds at two cents a package, and many packages were sold.

The report says, "Ash heaps, back yards, bare spots of dark unsightly soil have been converted into exquisite flower beds and nice grassy lawns. Hideous board fences have been transformed

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into beautiful emerald walls. Never in the history of St. Louis have so many flowers adorned its yards. The sick in the various hospitals have been cheered by the flowers, churches and homes have been decorated with them, and hundreds of friends of the children have shared the beauty and fragrance of the little flower gardens. The children have learned to know and care for flowers and have a better understanding of nature. They have changed many a humdrum yard and many a faded street into the dignity of a lawn or a beautiful thoroughfare.

The good effects are far-reaching in that hundreds who did not enter the contest were induced to make special efforts for home improvement."

A committee of three awarded the prizes: — Mr. H. C. Irish, assistant director of the Missouri Botanical Garden, Miss Isabel Mulford, a former teacher of botany in Vassar College and Mr. W. J. Stevens, principal of the Pope School. Mr. Stevens originated the plan by which Carthage, Mo., was made the most beautiful city in Missouri. Evidently these people consider that their time, skill and efforts are well spent in inducing children to make gardens at home and take care of them.

The prizes consisted of gold coins,— $20 for the first, $10 for the second, $5 for the third, and $1 each for the others taken in the order of merit. There were two contestants for the third prize so nearly alike in merit that $5 was awarded to each. The total awards amounted to $50.

It is worthy of notice that this work was carried out by a paper company, not by a horticultural society that might be naturally expected to favor gardening.

GARDENS OF THE MASSACHUSETTS CIVIC LEAGUE.

An admirable enterprise for the education and amusement of poor children during the school vacation has been inaugurated by the Massachusetts Civic League, Boston, Mass.

There is a large area of land on Columbus Avenue fitted up with all sorts of apparatus for the exercise and amusement of children— swings, teeter boards, sliding poles, sand piles, ladders, spaces for playing base ball, lawn tennis, croquet, etc., and a full corps of directors of games.

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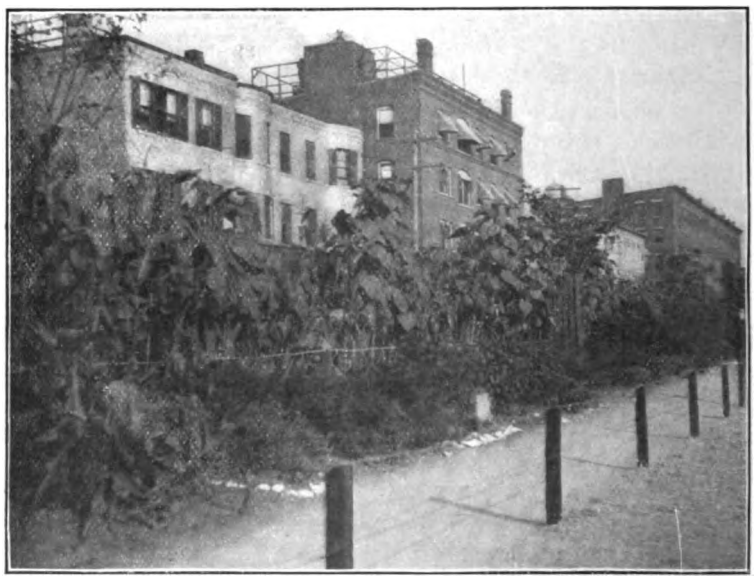
But especial mention should be made of 350 children's gardens, 110 of them being on Columbus Avenue. The beds are about 3½ by 6 feet in area and all together contain a great variety of garden vegetables and flowers. Some are neatly outlined with small rounded stones whitewashed. At four o'clock each afternoon the children who choose to do so come to water the gardens; and those belonging to absentees get just as much water as any others. The children appear to be delighted to use the watering pots; and some in their ardor wet themselves.



Children's Gardens, Massachusetts Civic League, Boston.

One little miss of ten told me that when she first received her garden she "got all wet in front." Then she continued, "The fence was all painted too, and I leaned up against it, like this, and got paint all over my dress. When I went home my mother said I must go to bed for making my dress look so. So I went to bed and staid about five minutes, and then got up and went out on the front doorsteps to play."

"Did your mother know when you went out?" I asked.

"No," she replied.

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Naturally enough the gardens show various degrees of success, and give no evidence of being molested by marauders. As I went into the grounds I saw two girls, about seven years old, rather better dressed than most of the children, picking flowers, of which they had quite a little bunch apiece. "Is that your bed?" I asked. "No," said one of the girls, "It belongs to a girl whom I

Watering.—Massachusetts Civic League Gardens, Boston.

know." "What is her name," I continued. She replied, "I can't think of it just now, but I know her when I see her."

The young lady who has charge of the garden work keeps a record of the condition of the beds, and neglect of a bed results in its loss, and another child gets it.

Something besides gardening is taught — patience, forbearance, respect for the rights of others, respect for labor, neighborly assistance, with the thoughts of doing as much as possible, instead

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of as little, which seems to be the animating principle in this age of strikes. No doubt the children will get over their unselfishness later on, but they are started aright.

My camera to a good degree will make up for the inadequacy of my words in describing these gardens.

Watering. — Massachusetts Civic League Gardens, Boston.

WEST INDIAN SCHOOL GARDENS.

The school garden movement has reached Jamaica and other islands of the West Indies.

The last number of "The West Indian Bulletin" devotes considerable space to the subject of school gardens, and clearly shows how estimable an educational means the school garden is thought to be in the West Indian Islands.

Among the many wise and suggestive remarks made are these: "School gardens and school plots are now a recognized feature in many of the West Indian Islands." "Object lessons in country schools should tend to produce a taste for work and study out of doors. All good object teaching should give the scholars something to do with their hands."

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Several plans of gardens and schemes of work in actual operation are given. The first scheme is carried out by a village school of one hundred and eighteen pupils with one head teacher and three assistants. The second employs one hundred pupils in a rural district. Each plot is thirteen feet square and is planted with a good variety of vegetables. The third makes provision for one hundred and twenty pupils under the charge of three certificated masters. Plants, insect and other animal life are carefully elaborated in the scheme and as carefully worked out by the children. The boys of this school collected, dried and mounted over two hundred different species of wild flowers.

The fourth is the most elaborate scheme of all, and is worked out by one hundred and twenty pupils under the instruction of a master and two assistants in the town of Kent.

The course is really scientific and includes the study of air, seeds, soils, weeds, grasses, shoots and roots by means of nicely contrived apparatus in doors in inclement weather and much observation and work out of doors in pleasant weather.

This is a very meagre summary of the article, but it shows clearly enough that Massachusetts can look to the West Indian Islands with profit as regards cultivating in children a taste for horticulture and country life. And the government is doing it. The government of Massachusetts is doing practically nothing about it, but is still hammering away on curricula that point the children pretty straight to a shop of some kind.

In a previous number of "The West Indian Bulletin," Vol. 3, No. 2, 1902, is this mention of one school garden:

"In one of the most successful schools, Mount Fletcher in St. Andrew, I am informed that the school children beg for seeds and cuttings to take home, and that not only are flowers eagerly sought after to cultivate but considerable quantities of vegetables are now raised locally and either consumed or sent to the Kingston market. The grant of £8.7s given in this instance is undoubtedly money well spent. The school garden is well worth a visit from any one who is interested in the development of agriculture amongst the people." The sales of the produce of this garden amounted to twenty-five dollars.

It will be noticed that the expenses exceeded the receipts by about fifteen dollars; in other words the garden was not self-

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supporting; and the gentleman who reported on school garden work in Jamaica mentioned the deficiency with a tone of regret. What school ever is self-supporting in the short run? It is the result of instruction in the long run that shows that schools pay. If it cost forty dollars to instruct forty children in garden work during one summer, no doubt the value of the instruction outweighed the cost.

The Barbados "Agricultural News," January 3, 1903, says: "School gardens are rapidly becoming recognized features of the educational work in several of the colonies. The time is approaching when every child in the West Indies will be enabled to learn practically the principles underlying agriculture."

ARTICLES AND LECTURES ON SCHOOL GARDENS.

"Current Literature" for November, 1902, contained a two-column article on school gardens, summarized from another article written by Mr. Dick J. Crosby in the "Outlook." In speaking of school garden work the editor says, "It is the kind of hard work that takes children out of doors and makes them feel like whistling, and no amount of such work ever makes nervous wrecks.

"The school garden should be found in connection with every kindergarten. The little fellows learning to recognize colors and geometrical forms should see the more pleasing natural colors and forms. They should be given an opportunity to see how the plant gets out of the seed, how the stem pushes upward and the little leaves turn green, while the white root pushes down into the soil. They should plant a few seeds for themselves, and then water and care for the plants when they come up. Thus will they learn and love to learn; thus will they get out in the pure air and sunshine."

Mr. George Henry Knight of New York has written several very readable articles on school gardens, and is now preparing another.

Dr. F. M. Powell of Glenwood, Iowa, has a strong article on that same subject in the Transactions of the Iowa Horticultural Society, now in our library.

Dr. Helen C. Putnam of Providence wrote several articles for the "Boston Transcript" which were afterwards put into pamphlet form. She made a very strong plea for the establishment of school gardens.

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Mr. Dick J. Crosby of the Agricultural Department at Washington has prepared a stereopticon lecture on the subject.

Mr. H. D. Hemenway, Director of the Hartford School of Horticulture, is doing the same.

I have made eighty slides, a part of which were shown at a meeting of the Boston Society of Natural History last winter, and shall show all of them at a meeting of the Rhode Island Horticultural Society in Sayles Hall, Brown University, Wednesday, February 18, 1903.

Mr. Samuel B. Greene, Professor of Horticulture and Forestry, University of Minnesota, writes me: "We are trying to do something of the sort in this section and want to get all the helpful data we can bearing on the subject. If your report for 1901 has been issued, I would like very much to get a copy of it, and would like to know if you have any collection of photographs on this subject that we could obtain. We shall be glad to take care of any expense incident to obtaining this matter."

From this I presume that he will prepare an illustrated lecture. I sent him a number of reports and magazine articles treating of the matter.

Our secretary informs me that he has many more calls for school garden reports than for all the other reports of this Society combined.

A long and valuable list of articles on school gardens written by prominent persons will be found on page 249. I am glad to know that such prominent and influential people do not esteem the school garden propaganda beneath their dignity, nor unworthy of their time and studious attention. They realize that children will be men and women one of these days, and what their tastes for or against horticulture may be is a matter of considerable concern, not only as regards their own happiness and usefulness but as regards the progress of horticulture itself.

It ought to be a cause for great rejoicing that a new way has been found for interesting and educating city-bred children by raising plants, wild or cultivated. Any horticultural society might well rejoice every time it induces a single person, man or boy, woman or girl, to get possession "of a little farm well tilled," though it be nothing more than a bed eight by ten feet.

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WOMEN AS GARDENERS.

RUMORED MOVEMENT TO START NEW DEPARTMENT AT WELLESLEY.

(Post, November 17, 1902.)

WELLESLEY, November 16.—Wellesley College, ever on the move toward the goal of progression, has in contemplation, according to friends of the college, a movement to install a new department of learning for women, namely, that of gardening.

While this may be somewhat of a novelty to Americans, there is nothing wonderful about it in England, where such an institution for female education has been established for the past fifteen years, and hundreds of successful graduates turned out.

The promoters of the new idea at Wellesley claim that no other female institution of learning in America has better advantages and facilities to conduct such a department, and as an argument point to their own spacious grounds and the splendid property and hothouses on the Hunnewell estate, famed the whole world over.

The Horticultural College at Swanley, Eng., covers all departments of farming except that of cattle. Women who hold graduates' certificates from it know the science of farming in the flower garden, in the vegetable garden and in the orchards, and, besides, what few graduates of ordinary agricultural colleges have any experience in, the manual labor of all kinds of horticultural work. They can hoe and spade when they have finished their work courses as well as any farm hand. Instruction is given, too, in the conduct of a dairy, the raising of bees and of chickens; in short, they learn in a few years what most men farmers who go to school to mother nature spend their lives in learning.

GIRLS STUDYING FARMING.

More than fifty girls are studying scientific farming in the Minneapolis College of Agriculture. The course they take includes botany, chemistry, physics and geology, requiring in the first two years two terms of each. They pay special attention to cooking, laundering, household economics, furnishing houses and social culture. They learn to plan buildings and to lay out grounds. By this means it is hoped that farmers can be provided with wives who will know enough about making life in the country attractive to keep the boys from emigrating to the towns and cities.

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PLANT STUDY IN WASHINGTON, D. C.

Through the influence of Professor Galloway, of the United States Department of Agriculture, a plot of ground one hundred and fifty feet square, or a little more than half an acre, and a greenhouse have been secured for the purpose of instructing the pupils of the Washington Normal School in the common operations of plant propagation, such as making cuttings and placing them in sand to root; then potting and taking care of the young plants. They are to have all the facilities for studying botany, such as the grass gardens, the economic and medicinal plants, the fine collection of native and exotic shrubs and trees and a magnificent collection of herbarium specimens. If this work proves successful its scope will be enlarged.

There is an idea in Washington that instruction on the theory and practice of plant growth will in some way find a place in the common schools of the country; and so the Normal School girls are being prepared to give that instruction.

The work proposed was outlined in the "Boston Sunday Journal," January 4, 1903, in a three column article illustrated by four photographic reproductions.

Miss Sipe, the science teacher of the Washington Normal School, has charge of the work.

LIST OF ARTICLES PUBLISHED ON SCHOOL GARDENS.

ARRANGED IN CHRONOLOGICAL ORDER. COMPILED BY MR. H. D. HEMENWAY.

1890.

"Horticultural Education for Children," by Henry L. Clapp, Principal of George Putnam School, Roxbury. Transactions of Massachusetts Horticultural Society for the year 1890.

1891 to 1902.

Report of the Committee on School Gardens and Children's Herbariums of the Massachusetts Horticultural Society, by Henry L. Clapp, Chairman, Boston, Mass.

1898.

"School Gardens," by Henry L. Clapp. Published in "Appleton's Science Monthly," February.

Teachers' Manual for Elementary and High Schools. First Edition.

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State of Nevada, Carson City, J. G. McCarthy, Superintendent. "Nature Study." Page 81.

Report of the Board of Trustees of Public Schools of the District of Columbia. Superintendent of Schools, Washington, D. C. "Vacation Schools." Page 49.

1899.

Report of the Commissioners appointed by the Legislature to Investigate and Report upon the Methods of Procedure in This and Other States and Countries in giving Instruction in Manual Training and in the Theory and Art of Agriculture in the Public Schools. L. D. Hart, Commissioner, Madison, Wis.

Chapter 33. "Methods of Instruction in Agriculture," U. S. Bureau of Education. Pamphlet.

Chapter 6. "Education in Central Europe." U. S. Bureau of Education. Pamphlet.

National Cash Register Company. Published in "Outdoor Art and Beautiful House Edition," June, Dayton, Ohio.

"School Gardens," by F. M. Powell, M. D., Glenwood, Ia. Read at the Iowa State Horticultural Society, Des Moines, Ia. Report.

Chapter 34. Extracts from Consular Report, U. S. Bureau of Education. Pamphlet.

Government Reports: Chap. 20. "School Gardens." U. S. Bureau of Education.

1900.

"School Gardens," by U. S. Bureau of Education. Washington, D. C. Bulletin.

"The Physician's Influence in Vacation Schools," by Helen C. Putnam, M. D. Reprinted from the Bulletin of the American Academy of Medicine. Pamphlet.

"Flower Gardens in Public Schools," by Jessie M. Good. Published in "How to Grow Flowers," The Floral Publishing Company, Springfield, Ohio.

Annual Report of the Superintendent of Education of the Public Schools of Nova Scotia, Halifax, Nova Scotia. "School Gardens." Page 27.

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1901.

"School Gardens," by Henry Lincoln Clapp, Master George Putnam School, Roxbury, Mass. Reprinted from "Education," May. Also reprinted in pamphlet form.

Chapter 27. Consular Reports, U. S. Bureau of Education. Pamphlet.

Chapter 15. "Public Playgrounds and Vacation Schools," U. S. Bureau of Education. Pamphlet.

"Agriculture and Rural Life in Public Schools," by Willet M. Hays, Professor of Agriculture, University of Minnesota, St. Anthony Park, Minnesota. Bulletin.

Manual of School Law, Nova Scotia. Committee of Public Works and Mines, Halifax, Nova Scotia. Page 66.

"Farming in the City." Philadelphia Vacant Lot Cultivation Association, Philadelphia, Pa. Report.

"Self-Help for Those Who Can't Work in the Usual Business." Philadelphia Vacant Lot Cultivation Association, Philadelphia, Pa. Report.

"Manual Training in Public Schools." Reprinted from a report of the Ontario Educational Association, by Professor James W. Robertson, Ottawa, Canada. Page 15, "The Rural Schools."

"Report, Rules and Regulations adopted by the Park Commission, Dayton, Ohio, also Hints, Suggestions on Street and Decorative Planting, Maintenance of Trees, Shrubs, Lawns, etc."

Report of "Home Gardening Association," Cleveland, Ohio, by E. W. Haines, President.

"Home Gardening Association," Cleveland, Ohio. Report.

1902.

"A Public School Garden," by Henry Lincoln Clapp. Published in "New England Magazine," June.

Report of the School Garden Session of the American Park and Outdoor Art Association, including the following papers: "The School Garden as a Phase of Industrial Work," by W. A. Baldwin, Principal of the State Normal School at Hyannis, Mass. "Boston Sand Gardens," by Miss Ellen M. Tower of Lexington, Mass. "The School Gardens at the School of Horticulture," by H. D. Hemenway, Director

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of the School of Horticulture, Hartford, Conn. "The National Cash Register Boys' Gardens," by George A. Townsend, Jr., of Dayton, Ohio. "Some Neglected Millions," by Mr. Knight, New York City. "How We Reach Eighteen Thousand School Children in New York," by Professor John W. Spencer of the Bureau of Nature Study at Cornell, University. "Nature Study for Children," by George F. Powell, Director of the School of Horticulture at Briar Cliff Manor, New York.

"The Hand Book for Planning and Planting Small Home Grounds," by Warren H. Manning. Published by the Stout Manual Training School, Menomonie, Wis.

Annual Distribution for Prizes for Outdoor Art and Landscape Gardening. Published by National Cash Register Company, June, Dayton, Ohio.

"The School Garden." Published by State Normal School, Hyannis, Mass., Hyannis, Mass. Catalogue and Circular.

"Efforts of the Pupils of the Public Schools for Home and Public Improvement," by Carthage, Mo., Public Schools, March 1.

"Two Foreign Schools and Their Suggestions," by Daniel S. Sanford. Published in "New England Magazine," May, 1133 Broadway, N. Y.

Prizes awarded to the Sunday Post-Dispatch Gardeners. Published in "St. Louis Post-Dispatch," Sept. 28, St. Louis, Mo.

"The School Garden." Published in "The Evening Star," Oct. 18, Washington, D. C.

"The Child Farmers of New York," by Louise Seymour Houghton. Published in "Christian Work and Evangelist," Oct. 25, New York City.

"The Country School and the Country Child," by O. J. Kern, County Superintendent of Schools, Rockford, Ill. Published in "School News," September, October, and November, Taylorville and Chicago, Ill.

"School Gardens, Their Devolopment and Functions," by Dick J. Crosby, Office of Experiment Stations, U. S. Department Agriculture. Published in "Outlook," August. With references.

"The Whittier School Garden." Published in "The Southern

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Workman," of November. Published by Hampton Inst. Press.

"School Gardens at the School of Horticulture, Hartford, Conn.," by H. D. Hemenway, Director of the School of Horticulture. Read before Boston Meeting of the American Park and Outdoor Art Association. Published in "Park and Cemetery," September, 324 Dearborn St., Chicago, Ill.

"Boys Trained for Citizenship." Published in "The World To-day," October, 153-155 LaSalle St., Chicago, Ill.

"Garden Movement for Schools," by Dick J. Crosby, Office of Experiment Stations, U. S. Department of Agriculture. Published in "The World To-day," October, 153-155 LaSalle St., Chicago, Ill.

"Farming Industry in the United States." Published in "The World To-day," September, 153-155 LaSalle St., Chicago, Ill.

"School Gardening in the Boston Normal School." Published in "Modern Methods," April, New England Publishing Co., Boston and Chicago.

Second Annual Report of the Vacation School Committee, Hartford, Conn.

"A Story of Home Gardens," by Starr Cadwallader, Cleveland, Ohio, Pamphlet.

"The National Cash Register Company." Published in "Social Service" for January. Published at 287 Fourth Avenue, New York City.

DATES NOT ASCERTAINED.

Reports issued by the National Cash Register Company of Dayton, Ohio.

Bulletins Nos. 62 and 71 of the Deparment of Agriculture of State of Pennsylvania.

"Hampton Nature Study Leaflet No. 7." Published by Hampton Institute Press, Hampton, Va.

"Suggestions for Progressive and Correlative Nature Study," by G. M. Carver, Tuskegee Normal and Industrial Institute, Tuskegee, Ala.

Fifty-first Missouri Report of Public Schools, W. F. Carrington, State Superintendent, Jefferson City, Mo. "Nature Study."

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Bulletins Nos. 121, 160, 205 of the Horticultural Division of Cornell University, Agriculture Experiment Station, Ithaca, N. Y.

Fifty-second Annual Report of the Public Schools of the City of Worcester, Mass. Superintendent of Schools, Worcester, Mass. "Nature Study and Garden Work." Page 48.

"The Country School and the Country Child." Winnebago County, Ill. Report.

Report of a visit to the Centralized Schools of Ohio, by O. J. Kern, County Superintendent of Schools, Rockford, Winnebago County, Ill.

"How to Beautify Carthage," by L. E. Archias Seed Company, 113-115 Main St., Carthage, Mo. Pamphlet.

Manual of Elementary Course of Study for the Common Schools of Wisconsin. L. D. Harvey, State Superintendent. "Nature Lessons." Page 89.

LIST OF PERSONS ACTIVELY ENGAGED OR INTERESTED IN CHILDREN'S GARDEN WORK.

Charles A. Allen, Secretary The Associated Charities, Dayton, Ohio.

William A. Baldwin, Principal Hyannis State Normal School, Hyannis, Mass.

Robert Barton, Principal Eliot School, 4250 Grove St., St. Louis, Mo.

W. D. Chamberlain, Vice-President The Beaver Soap Company, Dayton, Ohio.

Henry L. Clapp, Principal George Putnam School, Roxbury, Mass.

Dick J. Crosby, Office of Experiment Stations, Washington, D. C.

Mary C. Dickinson, Rhode Island Normal School, Providence, R.I.

The Edgemont Improvement Association, Dayton, Ohio.

L. D. Hart, Commissioner, Madison, Wis.

W. J. Hawkins, Principal of Irving School, 3829 North 25th St., St. Louis, Mo.

Professor Willet M. Hays, University of Minnesota, St. Anthony Park, Minn.

J. E. Higgins, City Supervisor of Agriculture, Honolulu, Hawaii.

Mrs. Horace B. Hooker, 837 St. Paul St., Rochester, N. Y.

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Mrs. Alice Hungerford, Old Orchard, Missouri.
Iowa State Horticultural Society, Des Moines, Ia.
Frederic H. Kennard, Landscape Architect, 85 Devonshire St., Boston, Mass.
A. H. Mackay, Superintendent of Education, Halifax, N. S.
Massachusetts Horticultural Society, Boston, Mass.
Mrs. Henry Parsons, 22 West 44th St,, New York City, N. Y.
George P. Phenix, Principal State Normal School, Willimantic, Conn.
Philadelphia Vacant Lot Cultivation Association, Philadelphia, Pa.
George P. Powell, Director School of Practical Agriculture, Briar Cliff, Manor, N. Y.
Dr. H. C. Putnam, 127 Angel St., Providence, R. I.
Charles H. Ramsdell, Menomonie, Wis.
C. G. Rathman, Garfield School, Jefferson Avenue and Wyoming Street, St. Louis, Missouri.
Raymond Riordon, Greenleaf School, Washington, D. C.
Professor James W. Robertson, Commissioner of Agriculture, Ottawa, Canada.
E. G. Routzhn, 1 Sunset Avenue, Dayton, Ohio.
Professor John W. Spencer, Ithaca, N. Y.
W. J. Stevens, Principal Pope School, St. Louis, Mo.
Miss Ellen M. Tower, Lexington, Mass.
George A. Townsend, Jr., National Cash Register Company, Dayton, Ohio.
F. A. Verpeauch, South Manchester, Conn.
Miss Dora Williams, Boston Normal School, Boston, Mass.

CHILDREN'S HERBARIUMS.

The quality of the children's herbarium work was quite equal to that of previous years. Nothing better than Dorothy Metcalf's and Dorothea Clapp's collection has been seen in our exhibitions. To quote from the "Transcript" notice: "Many of the specimens retain the original colors of the flowers to a degree of artistic as well as of botanical interest, as for example, the sabbatias, wood lilies, irises, sunflowers, roses, mallows, stargrass, cardinal flower and pickerel weed."

Many of the leaf sprays included the fruit of the tree and covered the sheets well. The fern specimens were large and complete as shown by the pictures.

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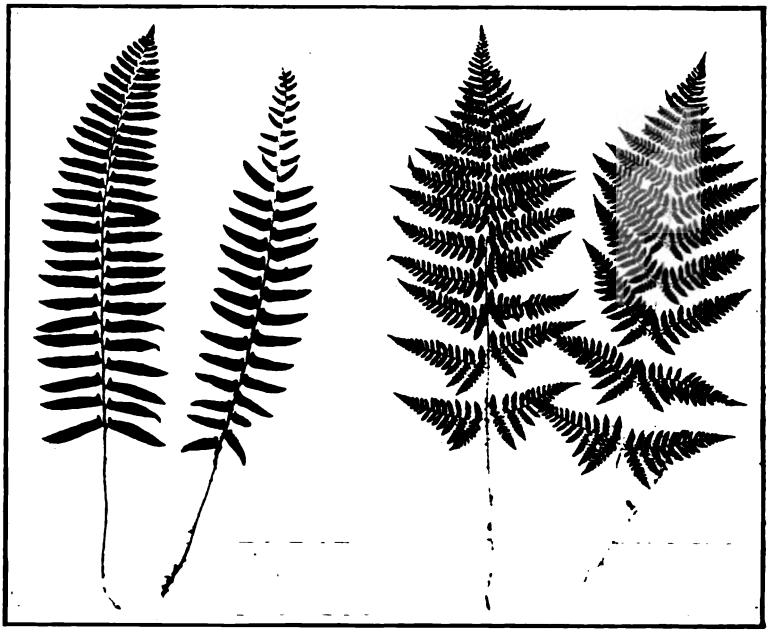
In short, the quality of these collections especially was so good that the Committee decided to purchase quite a number of specimens as the nucleus of a botanical collection to be placed in the herbarium room for ready reference. The need of such a reference herbarium has been felt every year during the preparation of the exhibition and the naming of unnamed specimens.

And the fact that specimens may be considered worthy of being bought and added to the Society's herbarium will, no doubt, have a tendency to improve the quality of the work of every exhibitor; so that it is confidently expected that a useful and beautiful collection will be formed in the course of time.



Christmas Fern. Spiny-Shield Fern.
Dorothy Metcalf's Herbarium.

The exhibition of fifty-four mosses correctly named by Christine Dudley Clapp was a new and valuable feature of this year's exhibition. Mosses are difficult things to determine anyway, and when the Society induces a school girl only sixteen years old to

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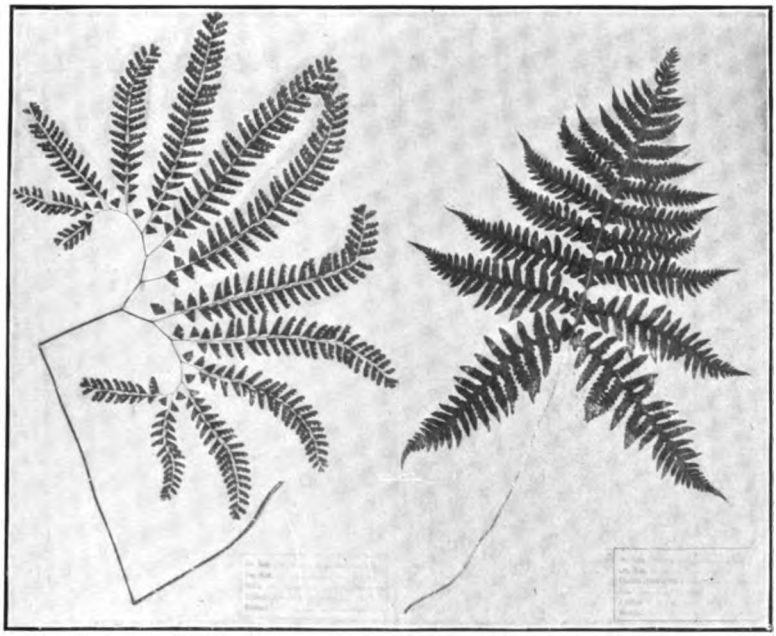
study up so well so difficult a subject as that of mosses and get together so fine a collection, it has done something of which it may well be proud. Such a starter as this frequently goes through the life and sweetens it continually.

The opportunity of putting such a collection on exhibition for hundreds of people to see, botanists included, is a great one, and it is hoped that more will take advantage of it, until mosses become as well known as flowering plants.



Maidenhair Fern. Phegopteris hexagonoptera.
Dorothy Metcalf's Herbarium.

Two members of this Society who have long been interested in mosses and have done very careful work in naming and exhibiting them examined this collection with evident pleasure, and disabilities of long continuance were forgotten in the added pleasure of the hour. This is surely one instance of sweetening the life to which reference has been made. And may there be many more!

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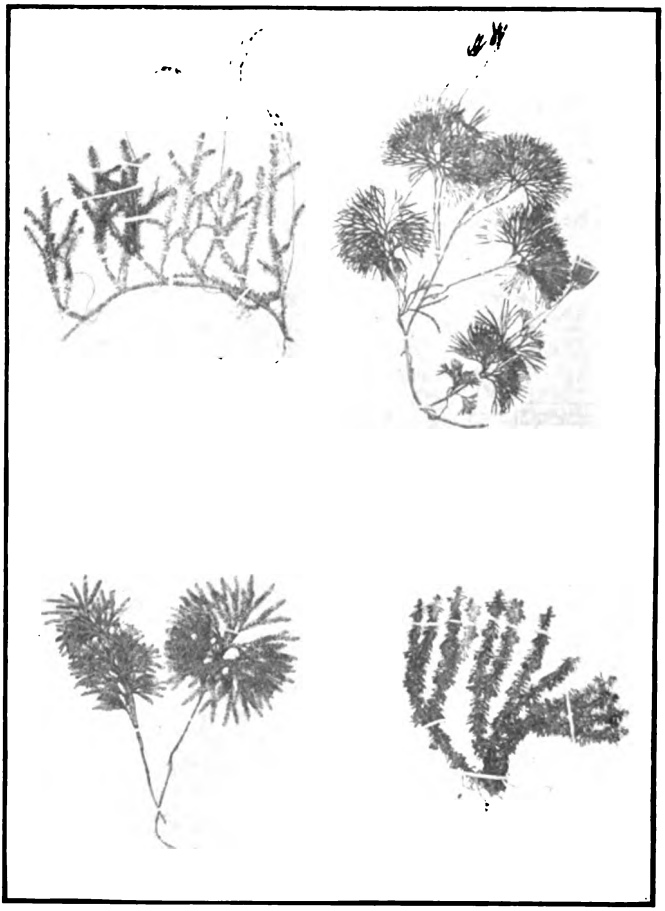

Lycopodium clavatum. Lycopodium complanatum.
Lycopodium dendroideum. Lycopodium lucidulum.
Olive L. French's Herbarium.

Then there was another unusual exhibit, Miss Olive L. French's collection of lycopodiums, of which four are illustrated. This bringing together the different species of a genus for comparison is of great educational value. Agassiz declared there was only one proper method of study—the "*compariteef*"—and Miss Olive L. French has it.

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Grass Pink. Large Blue Flag.
Linden. White Oak.
Dorothy Metcalf's Herbarium.

As noted in previous years, the family interest was shown again this year. The two Clapp girls exhibited specimens, and their small brother, Dudley, entered for the first time. There were three Swain boys, two Morss boys and two French girls among the exhibitors.

John Murdoch, Jr., now in Harvard College, exhibited over eighty new plants this year, although his contributions in previous years all told amounted to nearly six hundred different species.

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Although only eighteen years old he is already a good botanist, thanks to the opportunities and encouragements offered here. On account of his botanical knowledge he graduated from the Roxbury Latin School with extra high marks, the writer being present on the occasion.

LEARNING TO INVESTIGATE.

The children of the Ira Allen Primary School, Boston, have been induced to find every different species of plant that grows in the adjoining field, and it is expected that the results of similar work next year will appear among the children's herbariums exhibited in our hall.

That is a phase of plant work which we have not noticed before among small children; and we shall be glad to encourage the thorough investigation of a certain area, no matter how limited, which was Darwin's characteristic way of working.

A GERMAN SCHOOL GARDEN.

A bit of the rock garden, Gera, Germany.

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In Germany instruction on wild flowers and their cultivation is given quite as extensively as that on the kitchen garden. The botanic side of plants is considered quite as educative as the purely economic side.

The conditions for growing wild plants are much more varied than those for growing cultivated plants. There are wild plants that grow on Alpine heights, in watery marshes, deep woods, sand, cracks of rocks, and on other plants. The diverse conditions under which they grow furnishes a wide field of observation and learning.

A typical garden in furnishing varied conditions for growing over two thousand species of wild plants is located in Gera, Germany. Here all the children of the city come to observe and to receive instruction. It contains a spring from which flows a perennial stream.

The rock garden situated on an eminence is represented here by means of a reproduction from a photograph which I took in 1899. The area of the garden is a little less than an acre. A gardener and a director are regularly employed by the city to take care of it.

HORTICULTURE WITH NATIVE PLANTS.

Such gardens in Europe are very practical affairs. Our colleges have taught botany for many years, but not in the practical German method. However, if colleges all over the world have considered it of sufficient educational value to be entitled to a place in their curricula, there must certainly be such educational value in it as to command our respect and encouragement.

It is well to induce children to cultivate our native, hardy perennials as Mr. J. W. Manning, Rea Brothers, Mr. Horsford, Mrs. Wolcott and others have done. If they learn to love our native plants through their herbarium work no doubt some of them will desire to have them growing in their own gardens where they can see them easily and often.

Our public parks more and more are being adorned with our native plants and shrubs. One has only to walk through the Back Bay Fens, The Fenway, Franklin Park or the Arnold Arboretum to be convinced of that fact.

A large portion of our decorative plants grow wild somewhere,

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and that fact is nothing against them. The Botanic Garden at Cambridge is a most lovely spot; and our native plants make it so. Just as fine are the botanic gardens in Europe which I have visited. They furnish the people with flower shows every day from early spring to late fall.

I have cultivated hardy perennials including asters, golden-rods, violets, ferns, wild bean, heleniums and others, far too numerous to mention, for more then a score of years, and they improve greatly under cultivation. I am sure that is horticulture. A great many men and women have done the same, and we desire the number should be increased, that their happiness may be made more certain.

Some seem to forget that happiness may be found in a garden regardless of the size of the flowers or their market value. To many the twin-flower is as pleasing as the rose, the mayflower as the dahlia, the violet as the chrysanthemum.

PRIZES AND GRATUITIES AWARDED FOR SCHOOL GARDENS AND CHILDREN'S HERBARIUMS.

SCHOOL GARDENS.

George Putnam School, Roxbury, first prize $15 00

CHILDREN'S HERBARIUMS, NOVEMBER 28 AND 29, 1902.

FLOWERING PLANTS.

Gratuities:—

Dorothy Metcalf, for eighty-five additions to one hundred . . 3 40

John Murdoch, Jr., for sixty-three additions to four hundred and twenty-four 2 75

Marion L. French, for thirty-six additions to one hundred and forty-five 96

Robert D. Morss, for thirty additions to one hundred and seventy-five 84

Edward L. Morss, for twenty-five additions to one hundred and twenty-five 66

Olive L. French, for eighteen additions to two hundred and ninety-two 42

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Donald N. Swain, for thirteen additions to twenty-five	$ 35
Winthrop C. Swain, for three additions to eighty-five	04

FERNS AND FERN ALLIES.

Gratuities:—

Dorothy Metcalf, for thirty-one ferns and seven fern allies	5 70
Dudley Clapp, for thirty-one ferns	3 72
Sara E. Snell, for twenty-seven ferns	3 24
Olive L. French, for ten ferns and eight fern allies	2 34
Bessie R. Parmenter, for twelve ferns	1 20

SEDGES.

Gratuities:—

John Murdoch, Jr., for fourteen additions to sixty-eight	1 68
Winthrop C Swain, for seven specimens	40

GRASSES.

Gratuities:—

John Murdoch, Jr., for twelve additions to forty-eight	1 20
Olive L. French, for four additions to fifty	50

SPRAYS OF LEAVES.

Gratuities:—

Dorothea Clapp, for fifty-one additions to thirty	5 10
Charles D. Swain, for thirteen specimens	91

MOSSES.

Gratuity:—

Christine Dudley Clapp, for fifty-four specimens	5 00
Total for Gardens and Herbariums	$40 41

The amount of money appropriated by the Society for the use of the Committee was:

For Prizes and Gratuities	$125 00	
For Current Expenses	75 00	$200 00
The Committee has expended		59 02
Balance unexpended		$140 98

HENRY L. CLAPP, *Chairman*, Roxbury,
MISS KATHARINE W. HUSTON, Roxbury,
WILLIAM P. RICH, Chelsea,
CHARLES W. JENKS, Bedford,
MRS. H. L. T. WOLCOTT, Dedham,
HENRY S. ADAMS, Boston,
W. E. C. RICH, *Secretary*,
99 Moreland Street, Roxbury, Mass.

Committee on School Gardens and Children's Herbariums.

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REPORT

OF THE

COMMITTEE ON NATIVE PLANTS

FOR THE YEAR 1902.

By CHARLES W. JENKS, Chairman.

Collections of native plants were exhibited on the five days arranged in the schedule and all were marked by good displays, in fine condition, and well arranged. The exhibits were often so nearly equal in excellence that it was not easy to call one better than another, and your committee frequently found it difficult to determine the order of the awards. The increase from three to five prizes has worked well, and the limiting of the number of specimens of each species to three has, perhaps, lessened the effect as a display, but has in no way interfered with the botanical interest of the exhibits, and has shown the desire of the committee, as far as in its power, to discourage the unnecessary destruction of our native plants.

On May 10 were shown the usual early spring flowers.

On June 6 to 8, among others, were *Cypripedium spectabile*, *C. pubescens*, *C. parviflora*, *C. acaule*, *Liparis liliifolia*, *Arethusa bulbosa*, *Pogonia verticillata*, *Conopholis Americana*, and *Botrychium simplex*.

On July 12 were noted with interest, *Lysimachia stricta* var. *producta*, *L. vulgaris*, *L. punctata*, *Gnaphalium purpureum*, *Oenothera biennis* var. *cruciata*, *Rhododendron maximum*, and *Lobelia Dortmanna*.

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On July 19, for the prizes for native ferns, three collections were offered, and all were representatives of our native species and creditable to the exhibitors. While there were no rare specimens there were many of interest, among which may be mentioned the following: Mrs. Clark had an unusual form of *Asplenium Filix-foemina* with finely laciniate fronds somewhat resembling some of the English cut varieties; fine specimens of *Phegopteris hexagonoptera*, cultivated in garden; *Ophioglossum vulgatum*, called rare, but better described as common but rarely observed. Mr. C. C. Kingman exhibited four *Botrychiums*, *matricariefolium*, *ternatum*, *ternatum* var. *dissectum*, and *Virginianum;* the form of *Onoclea* called *obtusilobata;* some peculiar forms of *Asplenium Filix-foemina;* and *Asplenium angustifolium* cultivated in garden. The Misses Doran had a collection neatly arranged and in fine condition in which was *Aspidium Goldianum* cultivated in garden, and a form which came close to *Aspidium cristatum* × *marginale*. Mr. George E. Davenport kindly assisted the committee and his thorough knowledge of the species was of great assistance to them.

There were no exhibits for the prizes offered for cultivated native plants.

On August 2 the Misses Robbins of Cambridge had an interesting exhibit of our common roadside plants and weeds. In the other collections were *Habenaria blephariglottis*, *H. orbiculata*, *H. tridentata*, *H. psycodes*, *H. lacera*, *H. ciliaris*, *Microstylis ophioglossoides*, *Monarda didyma*, *M. clinopodia*, *M. fistulosa*, var. *rubra*, *Utricularia inflata*, *U. purpurea*, *U. vulgaris*, *U. cornuta*, and *U. gibba*.

On September 11, the last prize day of the season, there were brought a large collection of asters and goldenrods, and some excellent specimens of native plant fruits of which Miss Mann exhibited twelve species.

The committee are well pleased with the exhibits offered and hope next season that there will be more plants shown on days when no prizes are offered, as was the custom formerly. These displays of native plants are a marked feature of our exhibitions and the interest felt in them is shown by the large number of per-

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sons, both old and young, who gather around them to recognize an old acquaintance or to obtain the name of some new friend.

The committee, while not desiring to enter into the question of nomenclature, have felt that they should have some standard and for the present, as their rules for 1903 show, have decided on Gray's Manual.

PRIZES AWARDED FOR NATIVE PLANTS.

1902.

MAY 10.

NATIVE PLANTS.—Collection of thirty bottles of named species and varieties, one bottle of each:

1st, Mrs. Arthur Clark, $5; 2d, Mrs. W. S. Eager, $4; 3d, Misses E. A. and M. S. Doran, $3.

JUNE 7. (*Changed from June 6, 7 and 8.*)

NATIVE PLANTS.—Collection of thirty bottles of named species and varieties, one bottle of each:

1st, Mrs. W. S. Eager, $5; 2d, Mrs. Arthur Clark, $4; 3d, Miss R. L. Mann, $3.

JULY 12.

NATIVE PLANTS.—Collection of forty bottles of named species and varieties, one bottle of each:

1st, Mrs. Arthur Clark, $5; 2d, Misses E. A. and M. S. Doran, $4; 3d, Edward S. Colburn, $3; 4th, Miss R. L. Mann, $2.

JULY 19.

NATIVE FERNS. Collection of named species and varieties:

1st, Mrs. Arthur Clark, $6; 2d, C. C. Kingman, $5; 3d, Misses E. A. and M. S. Doran, $4.

AUGUST 2.

NATIVE PLANTS.—Collection of forty bottles of named species and varieties, one bottle of each:

1st, Mrs. Arthur Clark, $5; 2d, Mrs. W. S. Eager, $4; 3d, Misses E. A. and M. S. Doran, $3; 4th, Miss R. L. Mann, $2; 5th, Edward S. Colburn, $1.

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SEPTEMBER 11, 12, 13 AND 14.

NATIVE PLANTS.—Collection of forty bottles of named species and varieties, one bottle of each:

1st, Mrs. Arthur Clark, $5; 2d, Edward S. Colburn, $4; 3d, Mrs. W. S. Eager, $3; 4th, Miss R. L. Mann, $2; 5th, Misses E. A. and M. S. Doran, $1.

Appleton Silver Medal awarded to Mrs. Arthur Clark for the greatest number of first prizes for Native Plants.

Appleton Bronze Medal awarded to Mrs. W. S. Eager for the next greatest number of first prizes for Native Plants.

Amount appropriated for the use of the Committee		$175.00
Amount of Prizes	$83.00	
Cost of Medals	10.52	93.52
Balance unexpended		$81.48

CHARLES W. JENKS,
WILLIAM P. RICH,
MISS MARY RODMAN,
Committee on Native Plants.

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REPORT

OF THE

COMMITTEE ON FORESTRY AND ROADSIDE IMPROVEMENT

FOR THE YEAR 1902.

By JAMES STURGIS PRAY, Secretary.

To the President and Members of the Massachusetts Horticultural Society:—

The Committee on Forestry and Roadside Improvement respectfully report:

The principal work of the committee during the past year has been the carrying on of that referred to in our previous reports; namely,—the collecting, collating and tabulating of information regarding the distribution and condition of our roadside trees throughout the Commonwealth, with a view to publishing a report of these conditions, coupled with recommendations to the tree wardens and others having to do with the preservation and increase of the arboreal beauty of our roadsides. To this end we have again sent out copies of our original roadside circular, containing the series of specific inquiries, to all the tree wardens in the towns, and to the city foresters and others in the cities; and in this way have added substantially to the mass of statistical data already in hand. Meanwhile the arrangement of one part of this information has been finished, being divided under such heads as,—Record of replies; Work done; Condition of trees; Soils; Diseases and pests; Tree-guards; Effects of electric wires, gas,

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and pavements; Placards; Noteworthy individual trees; Real estate values; Arbor Day; Work in the schools; Town by-laws; Inquiries; etc. The tabulation of the other part of our accumulated information is rapidly nearing completion, as is also the mapping of the latter in a way to indicate graphically the distribution of species. It was in connection with this latter work that reference was made in a previous report to the relation which the work of this committee had to that of the Division of Biological Survey of the United States Department of Agriculture. Although the Secretary of the committee, who has been carrying on this work, is no longer able to give to it so much time as heretofore, he hopes to be able to submit, in behalf of the committee, to the Society before spring, the long promised report on all the material, in order that it may be printed, if the Society shall see fit, in season for circulation to the tree wardens, members of the Society, and others, early in April.

Whatever value may come out of this report, the more important work for the committee has been the correspondence with the tree wardens and others, and the helping them constantly with information and advice; and the committee believes that this good work should not be allowed to lapse through any inadequacy of appropriations.

In this connection, it may be well to state, in view of possible misunderstanding, that our committee is in closest sympathetic relation with the Massachusetts Forestry Association. On the one hand, so far as it is plowing the same field, the two are coöperating, and there is more than ample field for both. On the other hand, a large share of the work of this committee is entirely distinct from and unlike anything that the Massachusetts Forestry Association has as yet undertaken. As an instance of the coöperation above referred to, and a proof of the value of the existence of a Committee on Forestry, separate from the Massachusetts Forestry Association, we may refer to the several occasions when a cause espoused in common by the two, has been supported at the State House by the representatives of both; a bill originating with the Massachusetts Forestry Association receiving proportionately more consideration by having the united support of that Association, this Society (through its committee), the Board of

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Agriculture, and the Appalachian Mountain Club. It is often true, as has been conspicuously the case in the relations of our committee, that a number of independent but closely allied and coöperating organizations can, working together, wield a larger power than if united under one government.

In conclusion, we have only further to report at this time, and as additional instances of useful coöperation, that during the past year we have continued to use such opportunities as have offered for the distribution of the circulars of the Society for the Protection of Native Plants, and the American Park and Outdoor Art Association; and have taken part in the reception and entertainment of the latter Association on the occasion of its annual convention held last August in Boston, when the hospitality of our Society was so freely shown it.

Respectfully submitted for the Committee,

HARVEY N. SHEPARD, *Chairman*,
JAMES STURGIS PRAY, *Secretary*,
NATHANIEL S. SHALER,
HENRY S. HUNNEWELL,
J. WOODWARD MANNING,
Committee on Forestry and Roadside Improvement.

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REPORT

OF THE

COMMITTEE OF ARRANGEMENTS

FOR THE YEAR 1902.

By JOSEPH H. WOODFORD, CHAIRMAN.

As the year draws to a close we can look back with considerable satisfaction at the result of our endeavors to make the exhibitions attractive and fully appreciated by the multitudes of people who have attended them.

The Schedule of Prizes called for about the same number of exhibitions as are usually held during the year and some of them have taxed the halls to their utmost capacity to contain them; and in some instances considerable ingenuity had to be resorted to to accommodate the great number of exhibitors.

The arrangements have been carefully planned and so well carried out that everything done by the committee has met with the approval of the exhibitors and has redounded to the credit of the Society.

We are much pleased with the copious notices of our exhibitions in the newspapers and now wish to thank the reporters for taking so much pains for the benefit of our Society. The appropriation placed to the credit of this committee for extraordinary expenses has been expended judiciously and for the best interests of our exhibitions.

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The amounts received for admission fees to the three Shows, for which an entrance fee was charged, were as follows:

Spring Show, March	$771.00
Plant and Flower Show, September . . .	826.25
Chrysanthemum Show, November . . .	1,092.50
	$2,689.75

all of which is in the hands of the Treasurer.

Respectfully submitted,

JOSEPH H. WOODFORD,
ARTHUR H. FEWKES,
J. WOODWARD MANNING,
E. W. WOOD,
WARREN H. HEUSTIS,
PATRICK NORTON,
ROBERT FARQUHAR,

Committee of Arrangements.

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REPORT OF DELEGATE

TO THE

STATE BOARD OF AGRICULTURE

FOR THE YEAR 1902.

When one visits the Hatch Experiment Station at Amherst, he really wonders if the farmers and gardeners of the Commonwealth realize the importance of the work carried on in their interests. There are trained professors whose daily business is special investigation in the various departments of agriculture and horticulture; in the latter we are, perhaps, more especially interested. The work is done on a scale of sufficient magnitude to present the subject in all practical ways, and the products are large enough to insure of keeping in prompt touch with the market quotations.

There the cultivator finds the meat of the nut cracked for him; there he can find the best apples, pears, peaches, plums, and small fruits of all kinds. The directing professor can give lists of the most profitable varieties for the market or for family use.

Last summer the Trustees of the College made a change in the horticultural professorship, Prof. F. A. Waugh taking the place of Prof. Maynard. We remember the latter pleasantly in connection with several lectures with which he has favored this Society, as well as his exhibitions of fruits in illustration of some of his experiments.

The Hatch Experiment Station is well worth what it costs the state and the nation for its support.

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This has been a year of commemoration to the State Board of Agriculture, which was established in 1852, and consequently has now attained its semi-centennial, which was celebrated by a meeting in our Halls on July 22. Invitations were extended to all past and present members of the Board, also to the Governors of the New England States, and to the Secretary of the Department of Agriculture at Washington.

The venerable Ex-Governor Boutwell, who was in office at the time of the establishment of the Board, and who was one of its most cordial promotors, was present and addressed the meeting.

His Honor Lieut.-Governor Bates spoke for the Commonwealth, and a representative from the Department of Agriculture also spoke.

Dr. Goodell, President of the Agricultural College at Amherst, gave an exceedingly interesting historical address, and President O. B. Hadwen, of this Society, entertained the meeting with personal reminiscences of his membership in the Board.

The exercises closed with a collation in the smaller hall at which a large number participated.

WILLIAM H. SPOONER,
Delegate.

December 1, 1902.

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REPORT OF THE INSPECTOR

TO THE

STATE BOARD OF AGRICULTURE

FOR THE YEAR 1902.

To the State Board of Agriculture,

GENTLEMEN :—The duty you have assigned to me of inspection of exhibitions of the Massachusetts Horticultural Society is agreeable, and easy by comparison. There is indeed no comparison to make, as the high position of that Society in consequence of position in the state, and, indeed, in this nation, and beyond, is so elevated that what it has done, and is doing, can only be much praised. Comparisons with this Society can be best and only, perhaps, made with itself. Its management is acting under its existing rules of government, and the responsibility for keeping these rules in the most advanced condition has been placed by the state upon its members. The state gave it a Constitution in the Acts of Incorporation passed in the year 1829, and the power to make by-laws rests with the Society. It has done a noble work in the promotion of Massachusetts Horticulture; and it must succeed, and advance in wealth and horticultural promotion, so long as our citizens of wealth, and practical knowledge in matters given to its care, continue to have a united confidence that those sterling ideas which its founders held are unselfishly perpetuated.

We can safely record the facts that its several exhibitions within its new Halls, with its fine library accommodations adjoining, have deserved high commendation during the year.

FRANCIS H. APPLETON,

Inspector.

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REPORT

OF THE

COMMITTEE ON LECTURES AND PUBLICATION

FOR THE YEAR 1902.

By AARON LOW, CHAIRMAN.

The Committee on Lectures and Publication presents the following summary of its work for 1902:

A course of nine lectures has been delivered, as follows:

January 11. The Brown-Tail Moth in Massachusetts. By A. H. Kirkland, M. S.

January 18. Horticultural Possibilities for New England Farms. By Prof. F. Wm. Rane.

January 25. The Business End of Horticulture. By Patrick O'Mara.

February 8. The Methods and Results of Soil Sterilization. By Prof. G. E. Stone.

February 15. Fungous Diseases of Fruits. By Prof. M. B. Waite.

March 8. The Influence of American Expositions on the Out-Door Arts. By Warren H. Manning.

March 15. The Evolution of Vegetable Culture during the last Forty Years. By Warren W. Rawson.

March 22. Birds and Insects in their Relation to Agriculture. By E. H. Forbush.

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March 29. Some Famous Gardens of the World. By Miss Helena T. Goessmann.

The Schedule of Prizes for 1902 was issued January 17.

The Transactions for 1901, Part I, was issued July 1, and that for 1901, Part II, on October 27.

Part III of the Transactions for 1897 containing the accessions to the library for that year is now being printed.

AARON LOW,
JAMES H. BOWDITCH,
E. W. WOOD,
Committee.

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REPORT

OF THE

COMMITTEE ON THE LIBRARY

FOR THE YEAR 1902.

By WALTER S. PARKER, CHAIRMAN.

The Library Committee, in accordance with custom and the rules of the Society, respectfully submits the following report:

The committee desires to call the attention of every member of the Society to the beautiful and spacious rooms in which the library is now located. In many particulars they are all that could be desired, and especially is this true of the large, main hall. The light is excellent, the floor space ample, and the general architectural effect is very pleasing. It is a very fine room, withal, for a consulting library, and it seems unnecessary to add that it contains many rare and valuable books.

It is absolutely necessary, however, that some alterations be made in the large room, in order that it may meet the ends for which all libraries are instituted; namely,—first, the safe storage of books; second, a positive encouragement to the readers for the continued use of the books. Books are made for the purpose of being read and consulted, and every encouragement should be given to the patrons of the library. It is unfortunate that the shelves are all of uniform width (eight inches), and, in order to properly care for the large books and folios, it will be necessary to make some alterations.

Two methods have been considered by the Library Committee, either one of which will increase the efficiency of the library, and

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make it of greater use to the members of the Society. In one plan it is proposed to enlarge the lower shelves by building out the cases, thus making a greater depth of shelf for the accommodation of the large books and folios. The architect has expressed the opinion that this can be done without injuring the present pleasing architectural effect. The Library Committee, after carefully considering the matter, is inclined to favor this plan.

The other plan mentioned, and considered somewhat, is to keep the cases and shelves as they are at present, and to construct low, double-faced cases, to be placed in the centre of each alcove, thus making them serve the double purpose of bookcase and table. This latter plan, we understand, was the original idea suggested when the arrangement of the library was first under consideration. It is in some ways better than the first plan mentioned, and, if adopted, will not change the present architectural effect of the room.

Your committee is emphatically of the opinion that no change should be made in the library without first consulting the architect, and getting plans which will harmonize with the general proportion of the present interior furnishings of the room. We earnestly hope that the financial condition of the Society will warrant the Executive Committee in granting such sums as will enable these changes to be made.

We are sorry to record the resignation of the former chairman of the Library Committee, Mr. William E. Endicott, a gentleman who, by education and natural endowments, was especially adapted to the work of the Society. He was widely read in many departments of horticulture and was practically engaged in the culture of various plants and shrubs on his home place, thereby making his judgment especially valuable in the selection of books for the library. He has served for twenty-three years as chairman of this committee and has done most excellent work for the Society, and it is with deep regret that we record his resignation.

We add herewith a list of the books worthy of special mention, received during the past year.

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The seventh edition of Miller's Gardeners Dictionary; a 1517 edition of the Ortus Sanitatis; the first edition, 1664, of Evelyn's Sylva; Vol. II of the Botany of Captain Cook's Voyage; Delile's Flore D'Égypte (the botanical portion of Bonaparte's Égypte); Sanders' Orchid Guide (a useful reference book); American Gardens, by Lowell; Henderson's Picturesque Gardens; Gifford's Practical Forestry; Schwarz's Forest Trees and Forest Scenery; Charles Eliot, Landscape Gardener; Campbell's University Textbook of Botany; Britton's Manual of the Flora of the Northern States and Canada; Earle's Sun-dials and Roses of Yesterday.

Some of the books of a popular nature are Annie Oakes Huntington's Studies of Trees in Winter; the Handbook of the Trees of New England, by Dame and Brooks; a new edition of Frances Theodora Parsons' According to Season; F. Schuyler Mathews' Field Book of American Wild Flowers; Alice Lounsberry's Southern Wild Flowers and Trees; Cook's Trees and Shrubs for English Gardens; Jekyll and Mawley's Roses for English Gardens; Boyle's Woodlands Orchids; and Grout's Mosses with a Hand-lens.

We are glad to note the completion, after many years, of Pierre's Flore forestière de la Cochinchine, and Cesati, Passerini and Gibelli's Compendio della Flora Italiana. The concluding volumes of Professor Sargent's great work, The Silva of North America, have been received and also the fourth and last volume of Professor Bailey's Cyclopedia of American Horticulture. Besides these we have received continuations of Braithwaite's British Moss-Flora; Cogniaux and Goossen's Dictionnaire Iconographique des Orchidées; Collins, Holden and Setchell's Phycotheca Boreali-Americana; Flora Batava; Reichenbach's Icones Florae Germanicae et Helveticae; the second edition of Rabenhorst's Kryptogamen-Flora von Deutschland, Oesterreich und der Schweiz; Urban's Symbolae Antillanae; the Catalogue of Welwitsch's African Plants; Thiselton-Dyer's Flora of Tropical Africa; Hooker's Icones Plantarum; Bubani's Flora Pyrenaea; Triggs' Formal Gardens in England and Scotland; and Annals of the Royal Botanic Garden, Calcutta.

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Monographia Aquifoliacearum, Part I, by Loesener; Monographia Loasacearum, by Urban; and Studien über die Gattung Platanus have been presented by the Kaiserlich-Leopoldinisch-Carolinische Deutsche Akademie der Naturforscher, Halle.

WALTER S. PARKER,
GEORGE E. DAVENPORT,
CHARLES W. SWAN,
CHARLES W. JENKS,
T. OTIS FULLER,
Library Committee.

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REPORT

OF THE

SECRETARY AND LIBRARIAN

FOR THE YEAR 1902.

The hand that for twenty-five consecutive years has prepared the Annual Report of the Secretary and Librarian has dropped its busy pen and the active brain that guided it has ceased its labor. Suddenly upon the morning of the seventeenth of February of the present year, Robert Manning was gathered into the harvest of the eternal years. In another place will be recorded a fitting tribute to his memory and a biographical sketch of his long and fruitful life.

Upon the death of Mr. Manning the duties of these offices were performed under the direction of Mr. Nathaniel T. Kidder, of the Executive Committee, until July first, at which time the present Secretary and Librarian was appointed.

Notwithstanding the vicissitudes of the year, work on the publications of the Society has been steadily maintained, with the result that Part I of the Transactions for 1901, which had been edited by Mr. Manning, has been issued, as well as Part II of the same year, mostly prepared by Miss Charlotte M. Endicott and Miss Mary C. Hewett, the efficient assistants in the library. Part I of 1902 is now being printed and will be ready for distribution at an early date.

Work on the long delayed Part III of the Transactions, comprising the accessions to the library, has been renewed and an effort will be made to bring these issues up to date as quickly as possible. Part III of 1897 is now in press. It is hoped in the

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near future to incorporate the accessions with the current volumes of the Transactions, thereby discontinuing the third part, and rendering more promptly available the resources of the library.

While the valuable library of the Society is now handsomely established in its new and spacious halls, there remain some changes to be made in order that its usefulness may be increased and its accessibility rendered more convenient. Happily the problem of lack of shelf room which was for so many years the theme of discussion in this annual report has been now solved, but a new problem has arisen to take its place.

The work of final arrangement, the numbering of the shelves, and the cataloguing of the books have been greatly delayed by reason of the lack of proper shelving and the consequent uncertainty as to the disposition of the folios and quartos which constitute a large proportion of our volumes.

Fortunately, however, this problem is one of easier solution and a plan has already been adopted by the Library Committee by which this defect may be remedied. It is to be hoped that through the liberality of the Society the necessary means may be soon furnished whereby this improvement may be made and the library brought into a condition which its importance demands. The Librarian cannot too strongly urge the necessity of an early carrying into effect of this recommendation.

Through a special appropriation by the Society we have been enabled to add two new and improved card-catalogue cabinets, and a gift of $123.61 from the Building Committee will be expended for similar purposes, thereby adding to the convenience of all frequenters of the library.

Current standard publications of horticultural and botanical interest have been added to the library as promptly as possible and a partial list of some of the more noteworthy ones is appended to the report of the Library Committee. A collection of agricultural and horticultural books from the library of the late James F. C. Hyde has been presented by Mrs. Hyde and contains many desirable additions to the library.

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While not as many books have been taken from the library as in some previous years, its use for the purposes of reference and special study appears to have increased, and inquiries by mail from correspondents throughout the country on questions and subjects of horticultural and botanical interest are frequently received. The Secretary and Librarian and his assistants are always ready to render the resources of the library as helpful as possible to all interested inquirers.

The list of horticultural, agricultural and botanical journals of the world's best publications has been fully maintained and with all these valuable advantages and with the beautiful, well-lighted and spacious library room it would seem that the library should be of even greater service in the future than it has been in the past.

WILLIAM P. RICH,
Secretary and Librarian.

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TREASURER'S REPORT

FOR THE YEAR 1902.

MASSACHUSETTS HORTICULTURAL SOCIETY, *in account current with* CHARLES E. RICHARDSON, *December 31st, 1902.*

DR.

To amount paid on account of New Building			$175 00
" " " for Furniture and Exhibition Ware			93 39
" " " " Library, appropriated by Society	$400 00		
" " " from income of J. S. Farlow Fund	127 49		
" " " from income of J. D. Williams French Fund	200 75		
			728 24
" " " Interest on funds for Prizes, credited opposite			2,051 79
" " " L. J. Hunt, guardian			6,585 81
" " " for Heating	$1,651 68		
" " " " Lighting	699 96		
" " " " Water Rates	105 00		
" " " " Labor	2,627 48		
" " " " Stationery, Printing and Postage	2,042 46		
" " " " Insurance	3,476 60		
" " " " Incidentals	1,017 75		
" " " " Repairs	201 55		
" " " " Committee of Arrangements,	300 00		
" " " " " on School Gardens and Children's Herbariums	18 61		
" " " " Committee on Lectures and Publications	229 00		
Amounts carried forward		$12,370 09	$9,634 23

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Amounts brought forward	$12,370 09	$9,634 23
To amount paid for Committee on Forestry and Roadside Improvement .	$147 38	
" " " for Salaries of Treasurer, Secretary and Assistants . .	4,300 00	
" " " " Salaries of Committees .	1,043 00	
" " " " Tax on South Boston Property	139 12	
" " " " Electric Power . . .	348 15	
" " " " ⅔ Share of General Electric Stock	122 00	
" " " Alice M. Hobson, services in Library	75 01	
" " " for Legal Services . . .	100 00	
" " " American Park and Out-Door Art Association . .	100 00	
		18,744 75
" " " for Prizes awarded in 1901, viz.:		
H. H. Hunnewell, Triennial Prize . .	$160 00	
Prizes for Plants	1,287 50	
" " Flowers	1,039 02	
" " Fruit	653 00	
" " Vegetables	564 65	
" " Gardens and Greenhouses . .	415 00	
" " School Gardens and Children's Herbariums	83 75	
		4,202 92
		$32,581 90
Balance December 31, 1902		17,648 55
		$50,230 45

CR

By Balance of account rendered December 31, 1901 . .		$26,481 72
" Received from Building in 1902, use of Halls,	$3,905 00	
" " " Annual Exhibitions, Gross . . . $2,689 75 Less Expenses, 1,700 65	989 10	
" " " Admissions and Assessments .	1,498 00	
" " " Mount Auburn Cemetery . .	3,307 90	
" " " State Bounty	600 00	
Amounts carried forward	$10,300 00	$26,481 72

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Amounts brought forward		$10,300 00	$26,481 72
By Received from Sale of Transactions . .		3 50	
" " " Interest on Bonds .	$9,836 67		
" " " " " Stock .	610 00		
" " " " " Deposits in Bank . .	444 70		
	$10,891 37		
Less paid L. J. Hunt, Guardian,	448 93		
		10,442 44	
By Received from Estate of Benjamin H. Pierce, for Fund		800 00	
" " " Sale of ⅓ Share General Electric Stock		101 00	
" " " Edward Hatch, for Special Prize		50 00	
" Interest credited following Funds charged opposite:			
Samuel Appleton Fund .	$50 00		
John A. Lowell " .	50 00		
Theodore Lyman " .	550 00		
Josiah Bradlee " .	50 00		
Benjamin V. French " .	25 00		
H. H. Hunnewell " .	200 00		
W. J. Walker " .	117 72		
Levi Whitcomb " .	25 00		
Benjamin B. Davis " .	25 00		
Marshall P. Wilder " .	50 00		
John Lewis Russell " .	50 00		
Francis Brown Hayes " .	500 00		
Henry A. Gane " .	50 00		
John S. Farlow " .	100 00		
J. D. Williams French " .	200 00		
Benjamin H. Pierce " .	9 07		
		2,051 79	
			23,748 73
			$50,230 45

CHAS. E. RICHARDSON,
Treasurer.

Approved:

WALTER HUNNEWELL,
ARTHUR F. ESTABROOK,
O. B. HADWEN,
} *Finance Committee.*

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AUDITOR'S CERTIFICATE.

28 State Street, Boston, March 3d, 1903.

To the Finance Committee of the
Massachusetts Horticultural Society.

Gentlemen:—In compliance with your request I made a thorough audit of the books and general accounting affairs of the Massachusetts Horticultural Society for the year which ended with the 31st day of December, 1902, and herewith hand you my report of the same.

Report.

I added the ledger, journal and cash book and the small books tributary to the cash book and saw that all balances were correctly carried forward. I examined and checked the vouchers representing the disbursements during the year and found the amount of cash required by the cash book upon the first day of January, 1903, to have been on hand, and also examined the securities of the Society in the custody of the Treasurer and found that they were in all instances in accordance with the requirements of the record. I traced all postings from the journal and cash book into the ledger and proved the correctness of the balance sheet taken from the ledger as of the 31st day of December, 1902, which is a true statement of the financial condition of the Society upon said date, to the best of my knowledge and belief.

In short, I satisfied myself that the work in connection with the accounting affairs of the Society was being conscientiously and honestly performed, and that there was every evidence of faithfulness upon the part of the Treasurer.

Yours very respectfully,

ANDREW STEWART,
Examiner of Accounts.

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ASSETS AND LIABILITIES.

DECEMBER 31, 1902.

ASSETS.

Real Estate	$516,172 36	
Furniture and Exhibition Ware	8,250 54	
Library	41,301 62	
Stereotype Plates and Copies of History	246 50	
$1,000, Chicago, Burlington & Quincy, 7 % R. R. Bonds, Cost	1,000 00	
$2,000, Kansas City, Clinton & Springfield 5% R. R. Bonds, Cost	1,980 00	
$10,000, Lake Shore & Michigan Southern 3½ % R. R. Bonds, Cost	10,415 25	
$21,000, City of Newton 4 % Bonds, Cost	24,228 75	
$50,000, Atchison, Topeka & Santa Fe 4 % R. R. Bonds, Cost	44,693 25	
$50,000, Chicago, Burlington & Quincy, Nebraska Extension 4 % Bonds, Cost	50,012 50	
$10,000, Chicago & West Michigan 5 % R. R. Bonds, Cost	9,987 50	
$25,000, Kansas City, Fort Scott & Memphis 6 % Consols, Cost	27,523 75	
$50,000, Chicago, Burlington & Quincy, Illinois Division, 3½ % R. R. Bonds, Cost	51,625 00	
$8,000, Boston & Maine 4½ % R. R. Bonds, Cost	8,710 00	
$5,000, West End Street Ry. Co. 4½ % Bonds, Cost	5,162 50	
General Electric Co., 139 Shares of Stock, Cost	10,082 00	
W. A. Hayes & A. P. Loring, Trustees	3,488 76	
Cash	17,648 55	
		$832,528 83

LIABILITIES.

Prize and other Funds invested in Bonds:

Samuel Appleton	Fund,	$1,000 00	
John A. Lowell	"	1,000 00	
Theodore Lyman	"	11,000 00	
			$13,000 00
Amount carried forward			$13,000 00

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Amount brought forward . . .		$13,000 00	
Josiah Bradlee	Fund	$1,000 00	
Benjamin V. French	"	500 00	
H. H. Hunnewell	"	4,000 00	
W. J. Walker	"	2,354 43	
Levi Whitcomb	"	500 00	
Benjamin B. Davis	"	500 00	
Marshall P. Wilder	"	1,000 00	
John Lewis Russell	"	1,000 00	
Francis Brown Hayes	"	10,000 00	
Henry A. Gane	"	1,000 00	
John S. Farlow	"	2,501 92	
J. D. Williams French	"	5,000 29	
Benjamin H. Pierce	"	800 00	
		$43,156 64	
Prizes for 1902 payable in 1903 . .		8,250 00	
			$ 51,406 64
Surplus			781,122 19
			$832,528 83

C. E. RICHARDSON,
Treasurer.

Membership of the Massachusetts Horticultural Society, December 31st, 1902.

Life Membership per last report		686	
Added in 1902		28	
Commuted from Annual		5	
		719	
Deceased		25	
			694
Annual Membership per last report		184	
Added in 1902		21	
		205	
Commuted to Life		5	
Deceased		3	
Resigned		1	
Dropped for non-payment for two years . .		7	
		16	
			189
Present Membership			883

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INCOME FROM MEMBERSHIP.

28 new Life Members @ $30	$840 00
5 Commuted to Life @ $20	100 00
21 new Annual Members @ $10	210 00
Assessments	348 00
	$1,498 00

CHAS. E. RICHARDSON,
Treasurer.

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Dr. *Massachusetts Horticultural Society in account with the Proprietors of the Cemetery of Mount Auburn.* Cr.

For Sales and Improvements within the Cemetery during the year ending December 31st, 1902.

To cost of filling up and improving land at Mount Auburn for the year ending December 31st, 1902, the Massachusetts Horticultural Society being charged with their proportion of same:			By Sales in January		$40 00
			" " " April		1,192 00
			" " " May		2,820 00
			" " " June		1,916 00
			" " " July		3,274 00
			" " " August		564 20
			" " " September		1,668 00
			" " " October		2,280 50
			" " " November		480 00
			" " " December		20 00
					$14,254 70
Rear Walnut Avenue and Fern and Violet Path	$285 38		Net amount received from Receiving Tomb		1,043 00
Between Cherry and Magnolia Avenues	283 96				$15,297 70
Glen Avenue	36 75		Less graves repurchased		60 00
	$606 09				$15,237 70
One-fourth part of $606.09	$151 52		Deduct for Annual Expenses		1,400 00
Balance due Mass. Horticultural Society,	3,307 90				$13,837 70
	$3,459 42		One-fourth of $13,837.70 is		$3,459 42

E. & O. E.

JOHN L. DILL, *Treasurer.*

BOSTON, December 31st, 1902.

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THE MASSACHUSETTS HORTICULTURAL SOCIETY
To the PROPRIETORS OF THE CEMETERY OF MOUNT AUBURN. *Dr.*

To cost of filling up and improving land at Mount Auburn for the year ending December 31st, 1902, the Massachusetts Horticultural Society being charged with their proportion of same.

Rear Walnut Avenue and Fern and Violet Path.

24.5 days, man and horse	$ 91 88	
86 days, man	193 50	
		$285 38

Between Cherry and Maynolia Avenue.

41.1 days, man and horse	$154 13	
8.4 days, man and horse	31 50	
3 days, man and horse	15 75	
36.7 days, man	82 58	
		283 96

Glen Avenue.

9.8 days, man and horse	36 75
	$606 09
One-fourth of $606.09	$151 52

[Signed] JAMES C. SCORGIE,
Supt. of the Cemetery of Mount Auburn.

MOUNT AUBURN, December 31, 1902.

I certify the foregoing to be a true copy of the improvements for the year 1902 rendered by the Superintendent.

[Signed] JOHN L. DILL,
Treasurer.

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Massachusetts Horticultural Society.

OFFICERS AND STANDING COMMITTEES FOR 1903.

President.

O. B. HADWEN, of Worcester.

Vice-Presidents.

BENJAMIN P. WARE, of Clifton.

SAMUEL HOAR, of Concord.

JOSEPH R. LEESON, of Newton Centre.

OAKES AMES, of North Easton.

Treasurer and Superintendent of the Building.

CHARLES E. RICHARDSON, of Brookline.

Secretary and Librarian.

WILLIAM P. RICH, of Chelsea.*

Professor of Botany and Vegetable Physiology.

BENJAMIN M. WATSON, of Jamaica Plain.

Professor of Entomology.

SAMUEL H. SCUDDER, of Cambridge.

Delegate to the State Board of Agriculture.

WILLIAM H. SPOONER, of Jamaica Plain.

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* Communications to the Secretary, on the business of the Society, should be addressed him at Horticultural Hall, Boston.

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STANDING COMMITTEES.

Executive.

THE PRESIDENT, O. B. HADWEN, CHAIRMAN.
THE CHAIRMAN OF THE FINANCE COMMITTEE, WALTER HUNNEWELL, *Ex officio.*
WILLIAM C. STRONG.
WILLIAM H. SPOONER.
NATHANIEL T. KIDDER.
FRANCIS H. APPLETON.
BENJAMIN C. CLARK.
CHARLES W. PARKER.
CHARLES F. CURTIS.

Finance.

WALTER HUNNEWELL, OF BOSTON, CHAIRMAN.
O. B. HADWEN.
ARTHUR F. ESTABROOK.

Lectures and Publication.

AARON LOW, OF HINGHAM, CHAIRMAN.
JAMES H. BOWDITCH.
E. W. WOOD

Library.

WALTER S. PARKER, OF READING, CHAIRMAN.
GEORGE E. DAVENPORT.
CHARLES W. SWAN.
CHARLES W. JENKS.
T. OTIS FULLER.

Plants.

ARTHUR H. FEWKES, OF NEWTON HIGHLANDS, CHAIRMAN.
JAMES WHEELER.
DAVID F. ROY.
ROBERT CAMERON.
ROBERT MELROSE GREY.

Flowers.

KENNETH FINLAYSON, OF BROOKLINE, CHAIRMAN.
MICHAEL H. NORTON.
WILLIAM NICHOLSON.
ELIJAH A. WOOD
JULIUS HEURLIN.

Fruits.

E. W. WOOD, OF WEST NEWTON, CHAIRMAN.
CHARLES F. CURTIS.
WARREN FENNO.
J. WILLARD HILL.
GEORGE F. PIERCE.
JOHN L. BIRD.
FREDERICK W. DAMON.

Vegetables.

WARREN H. HEUSTIS, OF BELMONT, CHAIRMAN.
VARNUM FROST.
WALTER RUSSELL.
AARON LOW.
GEORGE D. MOORE.
JOSHUA C. STONE
MICHAEL SULLIVAN.

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Forestry and Roadside Improvement.

JAMES STURGIS PRAY, of Cambridge, Chairman.

NATHANIEL S. SHALER. HENRY S. HUNNEWELL.
JAMES H. BOWDITCH. HARLAN P. KELSEY.

Gardens.

PATRICK NORTON, of Dorchester, Chairman.

CHAIRMEN OF THE COMMITTEES ON PLANTS, FLOWERS, FRUITS, VEGETABLES, AND ARRANGEMENTS, *Ex officiis.*

HENRY W. WILSON. J. WOODWARD MANNING.

For Establishing Prizes.

WILLIAM H. ELLIOTT, of Brighton, Chairman.

CHAIRMEN OF THE COMMITTEES ON PLANTS, FLOWERS, FRUITS, VEGETABLES, AND GARDENS, *Ex officiis.*

JACKSON T. DAWSON.

Committee of Arrangements.

JOSEPH H. WOODFORD, of Boston, Chairman.

CHAIRMEN OF THE COMMITTEES ON PLANTS, FLOWERS, FRUITS, VEGETABLES, AND GARDENS, *Ex officiis.*

ROBERT FARQUHAR.

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MEMBERS FOR LIFE.

Members of the Society and all other persons who may know of deaths, changes in residence, or other circumstances showing that the following list is incorrect in any particular, will confer a favor by promptly communicating to the Secretary any needed corrections.

Information, or any clew to it, is especially desired in regard to members whose names are marked thus †.

Adams, Mrs. Charles Francis, South Lincoln.
Adams, Henry Saxton, Boston.
Alger, Rev. R. F., Dorchester.
Allen, Hon. Charles H., Lowell.
Allen, Thomas, Boston.
Ames, F. Lothrop, North Easton.
Ames, Mrs. F. L., North Easton.
Ames, John S., North Easton.
Ames, Miss Mary S., North Easton.
Ames, Oakes, North Easton.
Ames, Oliver, North Easton.
Ames, Mrs. Oliver, Sr., North Easton.
Ames, Preston Adams, Washington D. C.
Ames, Miss Susan E., North Easton
Amory, C. W., Boston.
Amory, Frederick, Boston.
Anderson, Larz, Brookline.
Andrews, Charles L., Milton.
Andrews, Frank W., Washington, D. C.
Andros, Milton, San Francisco, Cal.
Appleton, Francis H., Boston.
Appleton, William S., Boston.
Arnold, Mrs. George Francis, Brookline.
Ash, John, Pomfret Centre, Conn.
Asmus, Ernst G., West Hoboken, N. J.
Atkins, Edwin F., Belmont.
Ayer, James B., Boston.

Bailey, Jason S., West Roxbury.
Bailey, Robert M., Dedham.
Baker, Clifton P., Dedham.
Baker, James E., South Lincoln.
Ball, George H., Boston.
Banfield, Francis L., M.D., Worcester.
Barber, J. Wesley, Newton.
Barnard, James M., Boston.
Barnard, Robert M., Everett.
Barnes, Walter S., Boston.
† Barney, Levi C., Boston.
Barry, John Marshall, Boston.
Barry, William C., Rochester, N. Y.
Bartlett, Francis, Beverly.
Bartlett, Miss Mary F., Boston.
Bates, Miss Mary D., Ipswich.
Baylies, Walter C., Taunton.
Beal, Leander, Swampscott.
Becker, Frederick C , Cambridge.
Beckford, Daniel R., Jr., Dedham.
Beebe, E. Pierson, Boston.
Beebe, Franklin H., Boston.
Beebe, J. Arthur, Boston.
Bigelow, Albert S., Cohasset.
Bigelow, Joseph S., Cohasset.
Bigelow, Dr. William Sturgis, Boston.
Black, George N., Manchester.

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Blake, Miss Anne, Brookline.
Blake, Mrs. Arthur W , Brookline.
Blake, Edward D., Boston.
Blake, Francis, Weston.
Blake, Frederick A., Rochdale.
Blanchard, John W., West Newton.
Blinn, Richard D., Chicago, Ill.
Bliss, William, Boston.
Boardman, Samuel M., Hyde Park.
Boardman, T. Dennie, Manchester.
Bolles, William P., M. D., Roxbury.
Bosler, Frank C., Carlisle, Penn.
Bowditch, Charles P., Jamaica Plain.
Bowditch, Ernest W., Milton.
Bowditch, James H., Brookline.
Bowditch, Nathaniel I., Framingham.
Bowditch, William E., Roxbury.
Bowker, William H., Boston.
Brackett, Cephas H., Brighton.
Breck, Joseph Francis, Allston.
Bremer, Mrs. John L., Manchester.
Bresee, Albert, Hubbardton, Vt.
Brewer, Francis W., Hingham.
Briggs, William S., Lincoln.
Brigham, William T., Honolulu, Hawaii.
Brooks, Henry, Lincoln.
Brooks, J. Henry, Boston.
Brooks, Lawrence, Groton.
Brooks, Peter C., Boston.
Brooks, Shepherd, Boston.
Brown, Alfred S., Jamaica Plain.
Brown, Edward J., Weston.
Brown, George Barnard, Brookline.
Brown, John M., Belmont.
Brown, Samuel N., Boston.
Burlen, William H., Boston.
Burnett, Harry, Southborough.
Burnham, John A., Wenham.
Burr, Matthew H., Hingham.
Buswell, Frank E., Brooklyn, N. Y.
Butler, Aaron, Wakefield.
Butler, Edward K., Jamaica Plain.

Cabot, Dr. Arthur T., Boston.
Cabot, George E., Boston.
†Cadness, John, Flushing, N. Y.
Cains, William, South Boston.
Calder, Augustus P., Boston.
Cameron, Robert, Cambridge.
Campbell, Francis, Cambridge.
Capen, John, Boston.
Carlton, Samuel A., Boston.
Carr, Hon. John, Roxbury.
Carter, Charles N., Boston.
Carter, Miss Maria E., Woburn.
Cartwright, George, Dedham.
Casas, W. B. de las, Malden.
Chadbourne, Marshall W., East Watertown.
Chaffin, John C., Newton.
Chamberlain, Chauncy W., Boston.
†Chase, Andrew J., Lynn.
Chase, Daniel E., Somerville.
Chase, William M., Dorchester.
Cheney, Mrs. Elizabeth S., Wellesley.
Childs, Nathaniel R., Boston.
Choate, Charles F., Southborough.
Christie, William, Everett.
Claflin, Hon. William, Newtonville.
Clapp, Edward B., Dorchester.
Clapp, James H., Dorchester.
Clapp, William C., Dorchester.
Clark, Benjamin C., Boston.
Clark, B. Preston, Cohasset.
Clark, Miss Eleanor J., Pomfret Centre, Conn.
Clark, J. Warren, Millis.
Clarke, Miss Cora H., Boston.
Clarke, Eliot C., Boston.
Clough, Micajah Pratt, Lynn.
Cobb, John C., Milton.
Coburn, Isaac E., Everett.
Codman, James M., Brookline.
Codman, Ogden, South Lincoln.
Coe, Miss Mary Alma, Boston.
Coffin, Abraham B., Winchester.
Cole, Edward E., Boston.
Collamore, Miss Helen, Boston.
Colton, Samuel H., Worcester.
Converse, Elisha S., Malden.

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Converse, Col. H. E., Malden.
Coolidge, Harold J., Boston.
Coolidge, Joshua, Mount Auburn.
Coolidge, J. Randolph, Chestnut Hill.
Coolidge, Mrs. J. Randolph, Chestnut Hill.
Coolidge, T. Jefferson, Jr., Boston.
Cottle, Henry C., Boston.
Cox, Thomas A., Dorchester.
Coy, Samuel I., Boston.
Craig, William Nicol, North Easton.
Crane, Zenas, Dalton.
Crawford, Dr. Sarah M., Roxbury.
Crocker, Hon. George G., Boston.
Crocker, Miss S. H., Boston.
Crosby, George E., West Medford.
Cross, Alfred Richard, Nantasket.
Crowell, Randall H., Watertown.
Curtis, Charles F., Jamaica Plain.
Curtis, Charles P., Swampscott.
Curtis, Charles P , Jr., Boston.
Cushing, Livingston, Weston.
Cushing, Robert M., Boston.
Cutting, Gen. Walter, Pittsfield.

†Daggett, Henry C., Boston.
Dalton, Charles H., Beverly.
Daly, John C., Roxbury.
Damon, Frederick W., Arlington.
Dana, Charles B., Wellesley.
Daniels, Dr. Edwin A., Boston.
Davenport, Albert M., Watertown.
Davenport, George E., Medford.
Davis, Arthur E., Wellesley.
Davis, Mrs. Arthur E., Wellesley.
Davis, Edward L., Worcester.
Davis, L. Shannon, Brookline.
Dawson, Jackson T., Jamaica Plain.
Dee, Thomas W., Cambridge.
Denny, Clarence H., Boston.
Denton, Eben, Dorchester.
Dexter, F. Gordon, Boston.
Dexter, George, Beverly.
Dike, Charles C., Stoneham.
Doane, Edgar Howard, Wenham.
Doliber, Thomas, Brookline.
Donald, William, West Roxbury.
Donaldson, James, Roxbury.
Dorr, George, Dorchester.
Dove, George W. W., Andover.
Dowse, William B. H., West Newton.
Draper, Hon. Eben S., Hopedale.
Draper, George A., Hopedale.
Dreer, William F., Philadelphia, Pa.
Dumaresq, Herbert, Chestnut Hill.
Duncan, James L., New York, N. Y.
Dunlap, James H., Nashua, N. H.
Durant, William, Boston.
Durfee, George B., Fall River.
Dutcher, Frank J., Hopedale.
Dwight, Theodore F., Kendal Green.
Dyer, Herbert H., Cambridge.

Eaton, Horace, Cambridge.
Edgar, William W., Waverly.
Eldredge, H. Fisher, Boston.
†Eldridge, E. H., Roxbury.
Elliot, Mrs. John W., Boston.
Elliott, William H., Brighton.
Endicott, William, Boston.
Endicott, William, Jr., Boston.
Endicott, William C., Jr., Danvers.
Endicott, William E., Canton.
Estabrook, Arthur F , Boston.
Ewell, Warren, Dorchester.

Fabyan, George F., Brookline.
Fairchild, Charles, Boston.
Falconer, William, Pittsburgh, Pa.
Farlow, Lewis H., Cambridge.
Farnsworth, Mrs. William, Dedham.
Farquhar, James F. M., Roslindale.
Farquhar, John K. M. L , Roxbury.
Farquhar, Robert, North Cambridge.
Faxon, John, Quincy.
Fay, H. H., Wood's Holl.
Fay, Joseph S., Jr., Wood's Holl.
Fenno, L. Carteret, Boston.
Fessenden, George B., Allston.
Fewkes, Arthur H., Newton Highlands.
Finlayson, Kenneth, Brookline.
Fisher, Peter, Ellis.

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Flagg, Augustus, Boston.
Fletcher, George V., Belmont.
Fletcher, J. Henry, Belmont.
Fletcher, John W., Chelsea.
Flint, David B., Boston.
Foster, Charles H. W., Brookline.
Foster, Francis C., Cambridge.
Fottler, John, Jr., Dorchester.
Fowle, George W., Jamaica Plain.
French, Miss Caroline L. W., Boston.
French, S. Waldo, Jamaica Plain.
French, W. Clifford, Newton.
Frohock, Roscoe R., Malden.
Frost, Irving B., Belmont.
Frost, Varnum, Arlington.

Galloupe, Charles W., Swampscott.
Gardner, Mrs. Augustus P., Hamilton.
Gardner, George A., Boston.
Gardner, George P., Boston.
Gardner, John L., Boston.
Gardner, Mrs. John L., Brookline.
Gardner, William Amory, Groton.
Gaston, William A., Boston.
Gibbs, Wolcott, M.D., Newport, R.I.
Gill, George B., Medford.
Gillard, William, Dorchester.
Gilmore, E. W., North Easton.
Gilson, F. Howard, Wellesley Hills.
Goddard, Joseph, Sharon.
Goodell, L. W., Dwight.
† Gould, Samuel, Boston.
Gowing, Mrs. Clara E., Kendal Green.
Gray, James, Wellesley.
Gray, Mrs. John C., Boston.
Gregory, Hon. James J. H., Marblehead.
Grew, Edward S., Boston.
Grey, Benjamin, Malden.

Hadwen, Obadiah B., Worcester.
Hale, James O., Byfield.
Hall, Edwin A., Cambridgeport.
Hall, George A., Chelsea.
Hall, Jackson E., Cambridge.
Hall, Osborn B., Malden.
Hall, William F., Brookline.
Halliday, William H., South Boston.
Hammond, Gardiner G, New London, Conn.
Hammond, George W., Boston.
† Harding, George W., Arlington.
Harding, Louis B., Chestnut Hill.
Hardy, F. D., Cambridgeport.
Hargraves, William J., Jamaica Plain.
Harlow, James F., Quincy.
Harris, Charles, Cambridge.
Harris, Thaddeus William, A.M., Keene, N. H.
Hartshorn, Arthur E., Worcester.
Harwood, George Fred, Newton.
Haskell, Edwin B., Auburndale.
Hastings, Levi W., Brookline.
Hatch, Mrs. C. S., North Cambridge.
Hatch, Edward, Boston.
Haven, Franklin, Boston.
Hawken, Mrs. Thomas, Rockland, Me.
Hayward, George P., Roxbury.
† Hazeltine, Hazen, Boston.
Hellier, Charles E., Boston.
Hemenway, Augustus, Canton.
Hemenway, Mrs. Augustus, Canton.
Henshaw, Joseph P. B., Boston.
Henshaw, Samuel, Cambridge.
Heurlin, Julius, South Braintree.
Hewett, Miss Mary C., Canton.
Hews, Albert H., North Cambridge.
Higginson, Francis L., Boston.
Higginson, Mrs. Henry L., Boston.
Hilbourn, A. J., Boston.
Hill, John, Stoneham.
Hittinger, Jacob, Mt. Auburn.
Hoar, Samuel, Concord.
Hodgkins, John E., Portsmouth, N.H.
Hoitt, Hon. Charles W., Nashua, N. H.
Hollingsworth, Amor L., Milton.
Hollingsworth, Z. T., Boston.

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Hollis, George W., Grantville.
Holmes, Edward J., Boston.
Holt, Gustavus C., Belmont.
Holt, Mrs. Stephen A., Cambridge.
Holt, William W., Winchester.
Hooper, Mrs. Robert C., Boston.
Hooper, William, Boston.
Horner, Mrs. Charlotte N.S., Georgetown.
Horsford, Miss Kate, Cambridge.
Hosmer, Oscar, Wenham.
Hovey, Charles H., South Pasadena, Cal.
Hovey, Stillman S., Woburn.
Howard, Joseph W., Somerville.
Hubbard, Charles Wells, Weston.
Hubbard, James C., Everett.
Humphrey, George W., Dedham.
Hunnewell, Arthur, Wellesley.
Hunnewell, Henry Sargent, Wellesley.
Hunnewell, Walter, Wellesley.
Hunt, Dudley F., Reading.
Hunt, Francis W., Melrose.
Hunt, Franklin, Charlestown, N. H.
Hunt, William H., Concord.

Jack, John George, Jamaica Plain.
Jackson, Charles L., Cambridge.
Jackson, Robert T., Boston.
James, Ellerton, Nahant.
James, Mrs. Ellerton, Nahant.
James, George Abbot, Nahant.
Janvrin, William S., Revere.
Jeffries, William A., Boston.
Jenks, Charles W., Bedford.
Johanssohn, Emil, Brookline.
Johnson, J. Frank, Malden.
Jones, Jerome, Brookline.
Jones, Dr. Mary E., Boston.
Jordan, Eben D., Boston.
Jordan, Henry G., Hingham.
Jose, Edwin H., Cambridgeport.

Kakas, Edward, West Medford.
Kellen, William V., Marion.
Kelley, George B., Jamaica Plain.
Kendall, D. S., Woodstock, Ont.
Kendall, Edward, Cambridgeport.
† Kendall, Joseph R., San Francisco, Cal.
Kendall, Dr. Walter G., Atlantic.
Kendrick, Mrs. H. P., Boston.
Kennedy, George G., M.D., Roxbury.
Kent, John, Chestnut Hill.
Keyes, John M., Concord.
Kidder, Charles A., Southborough.
Kidder, Nathaniel T., Milton.
† Kimball, A. P., Boston.
Kimball, David P., Boston.
King, D. Webster. Boston.
Kingman, Abner A., Brookline.
Kingman, C. D., Middleborough.
Kinney, H. R., Worcester.
Knapp, Walter H., Newtonville.

Lamb, Horatio A., Milton.
Lancaster, Charles B., Boston.
Lanier, Charles, Lenox.
Lawrence, Amory A., Boston.
Lawrence, Amos A., Boston.
Lawrence, James, Groton.
Lawrence, John, Groton.
Lawrence, Rt. Rev. William, Boston.
Learned, Charles A., Arlington.
Lee, Daniel D., Jamaica Plain.
Lee, Francis H., Salem.
Lee, George C., Newton.
Leeson, Hon. Joseph R., Newton Centre.
Leighton, George B., Monadnock, N. H.
Lemme, Frederick, Charlestown.
Leuchars, Robert B., Dorchester.
Lincoln, George, Hingham.
Lincoln, Col. Solomon, Boston.
Little, James L., Brookline.
Little, John Mason, Swampscott.
Locke, Edwin F., West Medford.
Locke, Isaac H., Belmont.
Lockwood, Rhodes, Boston.
Lodge, Richard W., Boston.

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Loftus, John P., Dorchester.
Loomis, Elihu G., Bedford.
Loring, Augustus P., Beverly.
Loring, Mrs. William Caleb, Beverly.
Lothrop, William S. H., Boston.
Low, George D., Boston.
†Lowder, John, Watertown.
Lowell, Abbott Lawrence, Boston.
Lowell, Miss Amy, Brookline.
Luke, Otis H., Brookline.
Lumb, William, Boston.
Lunt, William W., Hingham.
Lyman, George H., Wareham.
Lyman, Mrs. Theodore, Brookline.

Mabbett, George, Plymouth.
Mackie, George, M. D., Attleboro.
† Mahoney, John, Boston.
Mallett, E. B., Jr., Freeport, Me.
Mann, James F., Ipswich.
Manning, Jacob W., Reading.
Manning, J. Woodward, Reading.
Manning, Mrs. Lydia B., Reading.
Manning, Warren H., Brookline.
Marshall, Frederick F., Everett.
Marston, Howard, Boston.
Mason, Miss Ellen F., Boston.
Mason, Col. Frederick, Taunton.
Mathison, Fred. R., Waltham.
Matthews, Nathan, Boston.
Matthews, Nathan, Jr., Boston.
May, Frederick W. G., Boston.
McCarty, Timothy, Providence, R. I.
McWilliam, George, Whitinsville.
Melvin, George, South Framingham.
Melvin, James C., West Newton.
Merriam, Charles, Boston.
Merriam, Herbert, Weston.
Merrill, Hon. Moody, Roxbury.
Metivier, James, Cambridge.
Milmore, Mrs. Joseph, Washington, D. C.
Minot, Charles S., Milton.
Mitton, Edward J., Brookline.
Mixter, George, Boston.
Monteith, David, Dedham.
Montgomery, Alexander, Natick.
Montgomery, Alexander, Jr., Natick
Moore, George D., Arlington.
Moore, John H., Concord.
Morgan, George H., New York, N. Y.
Morse, John T., Jr., Boston.
Morse, Robert M., Jamaica Plain.
Morton, James H., Mattapan.
Moseley, Charles H., Dorchester.
Motley, E. Preble, Boston.
Mudge, George A., Portsmouth, N. H.
Murdock, Albert L., Boston.
Murphy, William Bowen, Boston.
Murray, Peter, Fairhaven.
Mutch, John, Newtonville.

Nevins, Mrs. David, Methuen.
Newman, John R., Winchester.
Newton, Rev. William W., Pittsfield.
Nickerson, Mrs. George A., Dedham.
Norton, Charles W., Allston.
Norton, Edward E , Boston.

Oakman, Hiram A., North Marshfield.
Olmsted, Frederick Law, Jr., Brookline.
Olmsted, John C., Brookline.
Orpet, Edward O., South Lancaster.

Page, Mrs. Henrietta, Boston.
Paige, Clifton H., Mattapan.
Parker, Charles W., Boston.
Parkman, Henry, Boston.
Parsons, John E., Lenox.
Patten, Marcellus A., Tewksbury.
Paul, Alfred W., Dighton.
Peabody, Francis H., Boston.
Peabody, George A., Danvers.
Peabody, John E., Salem.
Peabody, S. Endicott, Salem.
Peck, O. H., Denver, Col.
Peck, William G., Arlington.
Peirce, Miss Marion W., Topsfield.
† Perry, George W., Malden.

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Pfaff, Col. Charles, South Framingham.
Phillips, John C., North Beverly.
Phillips, Mrs. John C., North Beverly.
Phillips, William, North Beverly.
Pickman, Dudley L., Boston.
Pickman, Mrs. Ellen R., Boston.
Pierce, Dean, Brookline.
Pierce, Elisha N., Waltham.
Pierce, George Francis, Neponset.
Pond, Preston, Winchester.
Poor, John R., Boston.
Pope, Col. Albert A., Cohasset.
Porter, Alexander S., Boston.
Porter, James C., Wollaston.
Porter, Hon. Joseph S., Washington, D. C.
Prang, Louis, Boston.
Pratt, Laban, Dorchester.
Pratt, Lucius G., West Newton.
Pratt, Robert M., Boston.
Prendergast, J. M., Boston.
Prescott, Eben C., New York, N. Y.
Presson, Alfred, Gloucester.
Pringle, Cyrus G., Charlotte, Vt.
Proctor, T. E., Boston.
Prouty, Gardner, Littleton.
Putnam, George, Manchester.
Putnam, George J., Brookline.
Putnam, Joshua H., Newton Centre.

Quinby, Hosea M., M.D., Worcester.

Raddin, Everett W., North Cambridge.
Rand, Harry S., North Cambridge.
Rand, Oliver J., Cambridgeport.
Rawson, Warren W., Arlington.
Ray, James F., Franklin.
Raymond, Walter, Boston.
Read, Charles A., Manchester.
Reardon, Edmund, Cambridgeport.
Reardon, John B., Boston.
Reed, Henry R., Jamaica Plain.
Rice, George C., Worcester.
Rich, William P., Chelsea.
Richards, John J., Brookline.
Richardson, Charles E., Brookline.
Richardson, Dr. William L., Boston.
Rinn, J. Ph., Boston.
Ripley, Charles, Dorchester.
Ripley, Ebed L., Hingham Centre.
Robbins, I. Gilbert, Melrose Highlands.
Robinson, John, Salem.
Robinson Joseph B., Dorchester.
Roffe, Albert H., Newton Centre.
Rogers, Mrs. Jacob C., Peabody.
Roland, Thomas, Nahant.
Rothwell, James E., Brookline.
Roy, David Frank, Malden.
Ruddick, William H., M.D., South Boston.
Russell, George, Woburn.
Russell, James S., Milton.
Russell, Hon. John E., Leicester.
Russell, Walter, Arlington.

Salisbury, William C. G., Brookline.
Saltonstall, Richard M., Chestnut Hill.
Sanford, Oliver S., Wellesley.
Sanger, Mrs. George P., Boston.
Sargent, Andrew Robeson, Brookline.
Sargent, Charles S., Brookline.
Sargent, Mrs. Charles S., Brookline.
Sargent, Charles Sprague, Jr., Brookline.
Sargent, Mrs. Francis W., Wellesley.
Sawtelle, Eli A., Boston.
Sawyer, Timothy T., Boston.
Scorgie, James C., Cambridge.
† Scott, Charles, Newton.
Sears, Miss Clara E., Boston.
Sears, Miss Emily E., Boston.
Sears, Dr. Henry F., Boston.
Sears, J. Montgomery, Boston.
Sears, Mrs. J. Montgomery, Boston.
Shaler, Nathaniel S., Cambridge.
Sharp, Miss Helen, Boston.

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Shaw, Christopher C., Milford, N. H.
Shaw, Francis, Wayland.
Shaw, Mrs. Robert G., Wellesley.
Sherman, William H., Boston.
Shorey, John L., Lynn.
Shuman, Hon. A., Roxbury.
Shurtleff, Josiah B., Jr., Revere.
Sias, Charles D., Wenham.
Siebrecht, H. A., New Rochelle, N.Y.
Simpkins, Miss Mabel, Yarmouth.
Skinner, Francis, Boston.
Skinner, Francis, Jr., Dedham.
Sleeper, Henry Davis, Boston.
Smith, Archibald, West Somerville.
Smith, Calvin W., Wellesley Hills.
Smith, Charles H., Newton Highlands.
Smith, Charles S., Lincoln.
Smith, Edward N., San Francisco, Cal.
Smith, George O., East Lexington.
Smith, Thomas Page, Waltham.
Snow, Eugene A., Melrose.
Sohier, Col. William D., Beverly.
Souther, Charles H., Jamaica Plain.
Spaulding, Edward, West Newton.
Spooner, William H., Jamaica Plain.
Sprague, Isaac, Wellesley Hills.
Springall, George, Malden.
Stearns, Charles H., Brookline.
Stearns, Frank W., Newton.
Stedman, Henry R., M. D., Roslindale.
Stevens, Hon. Moses T., Andover.
Stewart, William J., Winchester.
Stone, Charles A., Newton.
Stone, Charles W., Boston.
Stone, Prof. George E , Amherst.
Stone, George F., Chestnut Hill.
Strater, Herman, Roxbury.
Strong, William C., Waban.
Sturgis, Richard Clipston, Boston.
Swain Charles E., Roxbury.
Sweet, Everell F., Malden.

Taylor, Charles H., Boston.
Taylor, Horace B., Portland, Me.
Temple, Felker L., Boston.
Tenney, C. H., Methuen.
Thatcher, William, Brookline.
Thayer, Mrs. Alice R., Boston.
Thayer, Bayard, Lancaster.
Thayer, Mrs. Bayard, Lancaster.
Thayer, Eugene V. R., South Lancaster.
Thayer, Mrs. Eugene V. R., South Lancaster.
Thayer, John E., South Lancaster.
Thayer, Mrs. John E., South Lancaster.
Thayer, Nathaniel, Lancaster.
Thayer, Mrs. Nathaniel, Lancaster.
Thayer, S. V. R., Boston.
Thiemann, Hermann, Manchester.
Thomas, W. B., Manchester.
Thurlow, Thomas C., West Newbury.
Tilton, Stephen W., Allston.
Todd, John, Hingham.
Tolman, Benjamin, Concord.
Tolman, Miss Harriet S., Boston.
Toppan, Roland W., Malden.
Torrey, Everett, Charlestown.
Tower, Miss Ellen May, Lexington.
Tower, Mrs. Helen M., Cambridge.
Tower, Sylvester, Boston.
Travis, Charles B., Brighton.
Trepess, Samuel J., Glencove, L. I., N. Y.
Tucker, Lawrence, Boston.
†Turner, John M., Dorchester.

Underwood, Loring, Belmont.

Vander-Woerd, Charles, Waltham.
Vaughan, William Warren, Boston.
Vinal, Miss Mary L., Somerville.

Wakefield, E. H., Cambridge.
Walcott, Henry P., M.D., Cambridge.
Waldo, C. Sidney, Jamaica Plain.
Wales, George O., Braintree.

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Walker, Miss Mary Sophia, Waltham.
Walley, Mrs. W. P., Boston.
Walsh, Michael H., Wood's Holl.
Waltham, George C., Dorchester.
Walton, Daniel G., Wakefield.
Warburton, Chatterton, Fall River.
Ward, Francis Jackson, Roxbury.
Ward, John, Newton Centre.
Ware, Benjamin P., Clifton.
Ware, Miss Mary L., Boston.
Warren, Samuel D., Dedham.
Washburn, Andrew, Hyde Hark.
Watson, Benjamin M., Jamaica Plain.
Watson, Thomas A., East Braintree.
Watts, Isaac, Waverly.
Webber, Aaron D., Boston.
Webster, Hollis, Cambridge.
Welch, David, Dorchester.
Welch, Edward J., Dorchester.
Weld, Christopher Minot, Jamaica Plain.
Weld, George W., Boston.
Weld, Richard H., Boston.
Weld, Gen. Stephen M., Dedham.
West, Mrs. Maria L., Neponset.
Weston, Seth, Chelsea.
Wheeler, Frank, Concord.
Wheeler, James, Brookline.
Wheeler, Wilfred, Concord.
Wheelwright, A. C., Brookline.
Wheelwright, Edmund M., Boston.
Whitcomb, William B., Medford.
White, Mrs. Charles T., Boston.
White, Francis A., Brookline.
White, George R., Boston.
White, Joseph H., Brookline.
Whitney, Arthur E., Winchester.
Whitney, Ellerton P., Milton.
Whitney, Henry M., Cohasset.
Whittier, George E., Groton.
Whittier, William Benjamin, South Framingham.
Wigglesworth, George, Milton.
Wilbur, George B., Wood's Holl.
Wilder, Edward Baker, Dorchester.
Wilder, Henry A., Malden.
Willard, E. W., Newport, R. I.
Willcutt, Levi L., Brookline.
Williams, Miss Adelia Coffin, Roxbury.
Williams, Benjamin B., Boston.
Williams, Henry Bigelow, Boston.
Williams, John Davis, Boston.
Williams, Philander, Taunton.
Willis, Joshua C., Roxbury.
Wilson, Col. Henry W., Boston.
Wilson, William Power, Boston.
Winthrop, Robert C., Jr., Boston.
Wood, William K., West Newton.
Wright, George C., West Acton.
Wright, John G., Brookline.
Wyman, Oliver B., Shrewsbury.
Wyman, Windsor H., North Abington.

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ANNUAL MEMBERS.

Members of the Society and all other persons who may know of deaths, changes of residence, or other circumstances showing that the following list is inaccurate in any particular, will confer a favor by promptly communicating to the Secretary the needed corrections.

Alles, William H., Chestnut Hill.
Anderson, George M., Milton.
Arnold, Miss Sarah L., Newton Centre.
Atkinson, Miss Caroline P., Brookline.
Atkinson, Edward, Brookline.
Ayres, Miss Helen F., Medford.

Bangs, Francis R., Boston.
Barker, John G., South Bend, Ind.
Barr, John, Wellesley.
Bigelow, Arthur J., Eastlake, Worcester.
Bigelow, Mrs. Nancy J., Southborough.
Bird, John L., Dorchester.
Blackmur, Paul R., Quincy.
Blomberg, Carl, North Easton.
Boyden, Clarence F., Taunton.
Bradley, Miss Abby A., Hingham.
Braman, George H., Newton.
Breck, Charles H., Newton.
Breed, Edward W., Clinton.
Brunton, Frank, Stockbridge.
Bullard, John C., Cambridge.
Butler, Edward, Wellesley.

Carpenter, Frank O., West Roxbury.
Carter, Mrs. Sarah D. J., Wilmington.
Cary, Miss Alice B., Lexington.
Chase, Joseph S., Malden.
Chase, Philip A., Lynn.
Chubbuck, Isaac Y., Roxbury.
Clapp, Henry L., Roxbury.
Clark, John W., North Hadley.
Clark, Joseph, Manchester.
Clark, Theodore M., Newtonville.
Clinkaberry, Henry T., Trenton, N. J.
Collins, Frank S., Malden.
Comley, Norris F., Lexington.
Coolidge, Dr. Sumner, Watertown.
Cotter, Lawrence, Dorchester.
Cotting, Charles U., Boston.
Crosby, J. Allen, Jamaica Plain.
Curtis, Joseph H., Boston.
Curtis, Louville, Tyngsborough.

Davis, Frederick S., West Roxbury.
Derby, William H., Revere.
Dolbear, Mrs. Alice J., College Hill.
Dorr, George B., Boston.
Doyle, William E., Cambridge.
Duffley, Daniel, Brookline.
Duncan, John W., West Roxbury.

Eastman, Edmund C., Brookline.
Eaton, Warren E., Reading.
Endicott, Miss Charlotte M., Canton.
Eustis, William Tracy, Brookline.
Evans, Frank H., Malden.
Ewell, Marshall F., Marshfield Hills.

Farlow, Mrs. William G., Cambridge.
Fenno, Warren, Revere.
Fisher, Sewell, Boston.
Fiske, Harry E., Wollaston.

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Fitzgerald, Desmond, Brookline.
Fletcher, Fred W., Auburndale.
Forbes, William H., Jamaica Plain.
Foster, Lucius H , Dorchester.
Francis, George E , M. D., Worcester.
Fuller, T. Otis, Needham.

Garthley, James, Fairhaven.
Gill, Mrs. E. M., Medford.
Gilman, Hon. Virgil C , Nashua, N. H.
Grew, Henry Sturgis, Boston.
Grey, Robert Melrose, North Easton.
Grey, Thomas J., Chelsea.

Hall, Charles H., M. D., Corning, Cal.
Hall, Stacy, Boston.
Hallstram, Charles W., Boston.
Ham, Fernald E., Burlington.
Harris, Frederick L., Wellesley.
Harrison, C. S., York, Nebraska.
Harrison, Thomas, Melrose Highlands.
Hartwell, Samuel, Lincoln.
Hatfield, T. D., Wellesley.
Hersey, Edmund, Hingham.
Heustis, Warren, H., Belmont.
Hildreth, Miss Ella F., Lowell.
Hill, Arthur Dehon, Boston.
Hill, J. Willard, Belmont.
Hinds, Warren D., Townsend.
Hobbs, George M., Boston.
Hollis, George, South Weymouth.
Houghton, George S., West Newton.
Hovey, Charles L., Waban.
Howden, Thomas, Whitinsville.
Hubbard, Allen, Newton Centre.
Hubbard, F. Tracey, Cambridge.
Huston, Miss Katharine W., Jamaica Plain.

Illenberger, Henry, Brookline.
Ireland, Robert D., Winthrop.

James, Robert Kent, Dorchester.
Jameson, G. W., East Lexington.

Keith, Mrs. Mary R., Washington, D. C.
Kelsey, Harlan P., Boston.
Kemp, William S , Brookline.
Kennard, Frederic H., Brookline.
Kimball, Richard D., Waban.
Knott, N. W. T., Waban.

Lancaster, Mrs. E. M , Roxbury.
Laurie, Robert, Newport, R. I.
Lawson, Joshua. Brookline.
Lewis, E. L., Taunton.
Lincoln, Miss Agnes W., Medford.
Lomax, George H., Somerville.
Loring, Mrs. Thacher, Brookline.
Loring, William C., Beverly.
Lothrop, Thornton K., Boston.
Low, Hon. Aaron, Hingham.

Manda, W. A., South Orange, N J.
Manning, A. Chandler, Reading.
Manning, Richard C., Salem.
Martin William J., Milton.
Maynard, Charles, North Easton.
McLaren, Anthony, Westwood.
Meriam, Horatio C., D.M.D., Salem.
Metcalf, Dr. Ben H., Winthrop.
Milman, William, Roxbury.
Moody, Abner J., Lexington.
Morgan, George M., Boston.
Morrison, William, Cohasset.
Moseley, Frederick C., Dorchester.
Moseley, Frederick Strong, Newburyport.
Munson, Prof. W. M., Orono, Me.

Newton, John F., Roxbury.
Nicholson, William, Framingham.
Nixon, Arthur, Taunton.
Norton, Michael H., Boston.
Norton, Patrick, Dorchester.

Oakes, F. L., Newton.

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Park, William D., Boston.
Parker, John, Newtonville.
Parker, Walter S., Reading.
Patterson, William, Quincy.
Peirce, George H., Concord Junction.
Pettigrew, John A., Jamaica Plain.
Pierce, Mrs. F. A., Brookline.
Plimpton, Willard P., West Newton.
Pray, James Sturgis, Cambridge.
Pritchard, John, Newtonville.
Purdie, George A., Ormond, Florida.

Rea, Charles H., Norwood.
Rea, Frederic J., Norwood.
Rich, Miss Ruth G., Dorchester.
Rich, William E. C., Roxbury.
Richards, Mrs. P. D., West Medford.
Robb, Peter B., Whitinsville.
Robbins, Oliver R., Weston.
Robinson, Walter A., Arlington.
Rodman, Miss Mary, Concord.
Ross, Charles W., Newtonville.
Ross, Henry Wilson, Newtonville.

Sander, Charles, Brookline.
Saunders, Miss Mary T., Salem.
Scott, Augustus E., Lexington.
Scudder, Samuel H., Cambridge.
Searles, E. F., Methuen.
Seaver, Edwin P., Waban.
Sharples, Stephen P., Cambridge.
Shaw, Hon. Edward P., Newburyport.
Shea, James B., Jamaica Plain.
Shepard Harvey N., Boston.
Squire, Miss Esther A., North Cambridge.
Stevens, Mrs. Mary L., Cambridge.
Stone, Joshua C., Watertown.
Strange, David T., Stoneham.
Sullivan, Michael, Revere.
Sutherland, George A.. Roslindale.
Swan, Charles W., M.D., Brookline.

Tailby, Joseph, Wellesley.
Teele, William H., West Acton.
Tobey, Rufus T., Roxbury.
Tyler, Mrs. John F., North Andover.
Tyndale, Theodore H., Weymouth.

Vaughan, J. C., Chicago, Ill.

Ware. Horace E., Milton.
Warren, Samuel H., Weston.
Welch, Patrick, Dorchester.
Westwood, Thomas H., Jamaica Plain.
Wheeler, Ezra H., Dorchester.
Wheeler, Henry A., Newtonville.
Wheelwright, George William, Jamaica Plain.
White, W. Henry, Lowell.
Whitney, Joseph, Cambridgeport.
Whiton, Hon. Starkes, Hingham Centre.
Wilder, Miss Grace S., Dorchester.
Wilder, Miss Jemima R., Dorchester.
Wilkie, Edward A., Newtonville.
Winter, William C., Mansfield.
Wolcott, Mrs. H. L. T., Dedham.
Wood, Mrs. Anna D., West Newton.
Wood, Elijah A., West Newton.
Wood, E. W., West Newton.
Woodford, Joseph H., Boston.
Woods, Henry F., Boston.

Young, E. Bentley, Boston.

Zirngiebel, Denys, Needham.

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EXTRACTS FROM THE CONSTITUTION AND BY-LAWS.

SECTION XXII.

Life Members.

The payment of thirty dollars shall constitute a Life Membership, and exempt the member from all future assessments, and any Annual Member, having paid all dues, may become a Life Member by the payment of twenty dollars in addition thereto.

Annual Membership.

Every Annual Member, before he receives his diploma, or exercises the privileges of a member, shall pay the sum of ten dollars as an admission fee, and shall be subject afterwards to an annual assessment of two dollars.

SECTION XXIII.

Withdrawal or Discontinuance of Membership.

Any member may withdraw from the Society, on giving notice to the Treasurer and paying the amount due from him. Any member who shall neglect for the space of two years to pay his annual assessment, after due notice from the Treasurer, shall cease to be a member. The Treasurer shall give notice of such withdrawals, or discontinuances to the Secretary, who shall erase such members' names from the list.

The attention of Annual Members is particularly called to Section XXIII.

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HONORARY MEMBERS.

Members and correspondents of the Society and all other persons who may know of deaths, changes of residence, or other circumstances showing that the following list is inaccurate in any particular, will confer a favor by promptly communicating to the Secretary the needed corrections.

Information, or any clew to it, is especially desired in regard to Joseph Maxwell, *elected in* 1830, *and* George W. Smith, *elected in* 1851.

Hon. George S. Boutwell, Groton

Clarence H. Clark, Ex-President of the Pennsylvania Horticultural Society, Philadelphia.

Joseph Jefferson, Buzzard's Bay.

Major L. A. Huguet-Latour, M. P., Montreal, Canada.

Sir Trevor Lawrence, President of the Royal Horticultural Society London.

Joseph Maxwell, Rio Janeiro, Brazil.

Donald G. Mitchell, New Haven, Conn.

Baron R. Von Osten Sacken, Heidelberg, Germany.

Samuel B. Parsons, Flushing, N. Y.

Dr. Henry S. Pritchett, President of the Massachusetts Institute of Technology, Boston.

George W. Smith, Boston.

Albert Viger, President of the National Society of Horticulture of France, Paris.

Hon. James Wilson, Secretary of Agriculture, Washington, D. C.

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CORRESPONDING MEMBERS.

Members and correspondents of the Society and all other persons who may know of deaths, changes of residence, or other circumstances showing that the following list is inaccurate in any particular, will confer a favor by promptly reporting to the Secretary the needed corrections.

Information, or any clew to it, is especially desired in regard to Alexander Burton, *elected in* 1829; S. Reynolds, M.D., 1832; *and* Francis Summerest (or Summerer), 1833.

Édouard André, Editor-in-chief of the Revue Horticole, Paris, France.

George Francis Atkinson, Professor of Botany in Cornell University, Ithaca, N. Y.

Professor L. H. Bailey, Horticultural Department, Cornell University, Ithaca, N. Y.

John Gilbert Baker, F. R. S., F. L. S., Kew, England.

Charles Baltet, Président de la Société Horticole, Vigneronne, et Forestière de l' Aube, Troyes, France.

Peter Barr, London, England.

Archibald F. Barron, Turnham Green, London, W.

Napoleon Baumann, Bolwiller, Alsace.

D. W. Beadle, 303 Crawford St., Toronto, Ontario.

Professor William J. Beal, Agricultural College, Michigan.

Prosper J. Berckmans, Ex-President of the American Pomological Society, Upper Montclair, New Jersey.

Charles E. Bessey, Ph. D., Professor of Botany in the Industrial College of the University of Nebraska, Lincoln.

Dr. Ch. Bolle, Berlin, Prussia.

Col. Gustavus B. Brackett, Pomologist to the United States Department of Agriculture, Washington, D. C.

Professor J. L. Budd, Ames, Iowa.

F. W. Burbidge, M.A., Trinity College Botanic Garden, Dublin, Ireland.

Alexander Burton, United States Consul at Cadiz, Spain, Philadelphia

Rev. H. Honywood D'Ombrain, Westwell Vicarage, Ashford, Kent, England.

Sir W. T. Thiselton Dyer. K. C. M. G., F. R. S., Director of the Royal Botanic Gardens, Kew, England.

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PARKER EARLE, President of the American Horticultural Society, Roswell, N. M.

GEORGE ELLWANGER, Rochester, N. Y.

H. J. ELWES, F. R. S., Colesborne, Cheltenham, England.

WILLIAM G. FARLOW, M.D., Professor of Cryptogamic Botany, Harvard University.

B. E. FERNOW, Forestry School, Cornell University, Ithaca, N. Y.

HON. ROBERT W. FURNAS, Ex-President of the Nebraska State Horticultura-Society, Brownville.

BEVERLY T. GALLOWAY, Horticulturist and Superintendent of Gardens and Grounds of the United States Department of Agriculture, Washington, D.C.

CHARLES A. GOESSMANN, Ph.D., LL.D., Chemist of the Hatch Experiment Station of the Massachusetts Agricultural College, Amherst.

GEORGE L. GOODALE, M.D., Professor of Botany, Harvard University, Cambridge.

HENRY H. GOODELL, President of the Massachusetts Agricultural College, Amherst.

OBADIAH B. HADWEN, President of the Worcester County Horticultural Society, Worcester.

PROFESSOR BYRON D. HALSTED, Botanist and Horticulturist at the New Jersey Agricultural Experiment Station, New Brunswick, N. J.

PROFESSOR CARL HANSEN, of the Royal College of Agriculture, Copenhagen Denmark.

J. H. HART, Superintendent of the Botanic Garden, Trinidad.

DR. F. M. HEXAMER, Editor of the American Agriculturist, New York.

J. W. HOFFMANN, Colored State University, Orangeburg, S. C.

J. C. HOLDING, Ex-Treasurer and Secretary of the Cape of Good Hope Agricultural Society, Cape Town, Africa.

THE VERY REV. S. REYNOLDS HOLE, D.D., Dean of Rochester, Rochester, England.

SIR JOSEPH HOOKER, K.C.S.I., The Camp, Sunningdale, England.

JOSIAH HOOPES, West Chester, Pa.

SIR GEORGE KING, K. C. I. E., M. B., LL. D., F. R. S., Calcutta.

PROFESSOR WILLIAM R. LAZENBY, Department of Horticulture and Forestry; Secretary College of Agriculture and Domestic Science, Ohio State University, Columbus, O.

MAX LEICHTLIN, Baden-Baden, Germany.

VICTOR LEMOINE, Nancy, France.

DR. PETER MACOWAN, Government Botanist, Cape Town Herbarium, Cape Town, Africa.

DR. MAXWELL T. MASTERS, Editor of the Gardeners' Chronicle, London.

GEORGE MAW, Benthal, Kinley, Surrey, England.

T. C. MAXWELL, Geneva, N. Y.

F. W. MOORE, A. L. S., Curator of the Royal Botanic Gardens, Glasnevin, Dublin, Ireland.

DR. DANIEL MORRIS, C.M.G., D.Sc., M.A., F.L.S, Imperial Department of Agriculture, Barbados.

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GEORGE NICHOLSON, Kew, England.
PETER NØVIK, Secretary of the Norwegian Horticultural Society, Christiania.
WILLIAM PAUL, Waltham Cross, London, N.
PROFESSOR D. P. PENHALLOW, Director of the Botanic Garden, Montreal, Canada.
P. T. QUINN, Newark, N. J.
CAVALIÈRE ENRICO RAGUSA, Palermo, Sicily.
D. REDMOND, St. Nicholas, Florida.
S. REYNOLDS, M.D., Schenectady, N. Y.
BENJAMIN LINCOLN ROBINSON, Ph.D., Curator of the Gray Herbarium of Harvard University, Cambridge.
WILLIAM ROBINSON, Editor of Gardening Illustrated, London.
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The Massachusetts Horticultural Society is endeavoring to collect complete sets of the Bulletins and other publications of all the Agricultural Experiment Stations in the United States and Canada. Those named below are wanting, and any person having a spare copy will confer a favor by addressing the Librarian of the Society, Horticultural Hall, No. 300 Massachusetts Ave., Boston.

Alabama (Ag. and Mech. College Station).— Bulletins 4–6 (1884), 7–10 and 1–4 (1885), and 5–9 (1886). 7th Annual Report, for 1894, and 9th, for 1896.

Alabama (Canebrake Station).— All Bulletins later than 18, and all Annual Reports later than the 3d, for 1890.

Alabama (Tuskegee Station).—Bulletin 2.

Arizona. — 4th Annual Report, for 1893.

Arkansas.— Bulletin 1. All Annual Reports later than the 4th, for 1891, except the 8th, for 1895.

California.— Bulletins 32, 1878, and 1, 2, 3, 5, and 50, New Series.

Colorado.— Bulletin 3.

Connecticut (New Haven Station).—Bulletins 1 to 67, inclusive. Annual Reports for 1879 to 1883, inclusive.

Florida.— Annual Report for 1892.

Indiana.— (Purdue Univ. School of Ag.). — Bulletin 1. College Reports 1 to 14, inclusive

Iowa.—Bulletins 54, 55 and 56. (The original bulletins.)

Kentucky.— Bulletin 10.

Michigan.— Special Bulletin 1. 6th Annual Report, for 1892-93 (contained in Report of Michigan Board of Agriculture, 1893).

Missouri. — Bulletins 9, 13, 15, 16, 19, 20, 25 and 26 of Old Series. All Annual Reports since the 1st, for 1888, except those for 1896 to 1898, inclusive.

Montana.—Bulletins 27, 29 and 31.

New Jersey.— Bulletins 1, 4, 5, 15, 27 and 28.

New Mexico.— Eighth College Catalogue, 1897–98.

New York (Cornell). — 1st Annual Report, 1881–82, and all between that and 1888, except the 2nd, for 1882-83. (Reports of Agricultural Department of Cornell University.)

North Carolina. — Bulletins 1 to 56, inclusive, 69, 2d ed., and 174. 1st to 7th Biennial Reports. Meteorological Division, Bulletin 2 (68*b*). Special Bulletins 1 (77*a*) and 4 (82*a*). Weekly Weather Crop Bulletins 1–21, 1888; 1–24, 1889; 1–25, 1890; 2 and 4, 1891.

North Dakota.— 4th Annual Report, for 1893.

Ohio.— All Bulletins of First Series, except 16, 17, 18 and 19.

Oklahoma. — All Annual Reports previous to that for 1896–97, except that for 1893–94.

Pennsylvania — Annual Reports for 1869, 1872, 1879–80, 1881, 1882, 1883 and 1884 [All issued by the State College.] Bulletin of Information No. 1.

South Carolina.— All Bulletins of the Old Series (previous to 1888) on the work of the Experimental Farm of the South Carolina College. 3d Annual Report, for 1890, and 6th, for 1893.

Texas.—College Bulletins 1–5, 1883–1887.

Virginia. — 10th Annual Report for 1898-99.

Washington. — Bulletins 28 and 29 6th, 7th and 8th Annual Reports, for 1895–96, 1896–97, and 1897–98.

West Virginia.— Special Bulletin — Potash and Paying Crops, 1890.

Wyoming.—Bulletins 2 to 4, 9 and 10.

Ontario Department of Agriculture, Toronto.—Bureau of Industries. — Agricultural Returns to the Ontario Bureau of Industries, Nov. 1882 (5th), Aug. 1883 (7th), and Nov. 1887 (20th).

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